LOWER SILVER CREEK
(REACH 1&2)
DESIGN REPORT

FROM COYOTE CREEK
TO MCKEE ROAD

CONSISTING OF
PRELIMINARY DESIGN REPORT
DECEMBER, 1989

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose 95118, Phone 265-2600

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SANTA CLARA VALLEY WATER DISTRICT

HYDRAULIC DESIGN REPORT

FOR

LOWER SILVER CREEK

REACHES I AND II

DECEMBER 1989

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HYDRAULIC DESIGN REPORT

LOWER SILVER CREEK
REACHES I AND II
PRELIMINARY HYDRAULIC DESIGN REPORT

Job: Lower Silver Creek Reaches I and II
Project: Lower Silver Creek Watershed Project
Location: San Jose, California
Authority: Public Law 83-566

SUMMARY

This report represents the hydraulic design and preliminary channel alignment layout of Lower Silver Creek Reaches I and II. The hydraulic design is based on channel capacity and stability requirements. The design flows were presented in the Final Watershed Plan and Environmental Impact Statement/Report (EIS/EIR).

DESCRIPTION OF JOB

The Lower Silver Creek Project provides watershed protection and flood prevention through channel construction and through the installation of structure measures. This job consists of Reaches I and II.

Reach I (0.76 miles) consists of:

- -- 0.37 miles of excavated trapezoidal earth channel
- -- 0.34 miles of trapezoidal concrete channel
- -- 0.05 miles of rectangular concrete channel
- -- 0.14 miles of levees near the confluence with Coyote Creek
- -- 0.24 miles of floodwalls along the 60' base width trapezoidal earth channel
- -- one, 5.1 foot grouted rock drop structure near the confluence
- -- 3.1 acres of biological mitigation plantings
- -- Acquisition of _____ acres of additional right-of-way

Reach II (0.24 miles) consists of:

- -- 0.21 miles of rectangular concrete channel (NOTE: the remaining 0.03 miles is the existing box culvert)
- -- 0.30 acres of landscape mitigation plantings

Reaches I and II are both designed to protect the surrounding area from the 10-year and 100-year event.

JOB CLASSIFICATION

-
- (To be filled in by SCS)
-

DESIGN OBJECTIVES

The purpose of this design is to develop the channel alignment, cross section, and drop structure which will provide stability for both capacity and erosion.

BASIS FOR DESIGN

1. National Handbook of Conservation Practices (NHCP)
2. TR-25; Design of Open Channels
3. NEH-5; Hydraulics
4. Linsley/Franzini, Water Resources Engineering
5. Soil Conservation Service, Far West States
6. Lower Silver Creek Watershed Recommended Plan Documentation for Reach I and II
7. Lower Silver Creek Watershed Plan and Environmental Impact Statement/Report
8. U.S. Department of the Interior, Bureau of Reclamation, Design of Small Dam
9. U.S. Army Corps of Engineers, HEC-2; Water Surface Profiles
10. Geologic Report for Lower Silver Creek
11. NEH-6; Structural Design
12. TR-50; Design of Rectangular Structural Channel
13. TR-67; Reinforced Concrete Strength Design
14. McCormac, Design of Reinforced Concrete

DESIGN NARRATIVE

General:

The preliminary hydraulics for the channel at Reaches I and II were calculated by Soil Conservation Service and are shown in the Lower Silver Creek Watershed Recommended Plan Documentation for Reach I and II. This design has been revised to fit the criteria set forth in NHCP Grade Stabilization Structure (410), NHCP Open Channel (582), and NHCP Stream Channel Stabilization (584).

1. Location and Layout

   The alignment of Reach I and II has been develop to best fit the existing right of way owned by Santa Clara Valley Water District.

2. Hydrology

   The hydrology for these two reaches is provided in the Watershed Work Plan.

   The design flow for the 100-year event: Reach I : Q(1%) = 6100 c.f.s.
   Reach II: Q(1%) = 5200 c.f.s.

   The design flow for the 10-year event: Reach I : Q(10%) = 4100 c.f.s.
   Reach II: Q(10%) is not required due to the rectangular concrete lining.

3. Hydraulic Design

The hydraulic design of Reach I and II is primarily based on the requirement of TR-25 Design of Open Channels. The foremost considerations of this design are Flood Water Protection, Channel Stability, Environmental Conformance, Land Rights, and Channel Maintenance.

Channel stability is achieved by reducing channel gradients to produce non erosive channel energies.

The control section for Lower Silver Creek Reach I and II is at station 0+50 (confluence of Coyote Creek and Lower Silver Creek). The water surface elevation for Q(1%) and Q(10%) are 80.2 feet and 76.9 feet respectively. These elevations were determined by the Soil Conservation Service.

Reach I: The drop structure is hydraulically designed as a chute to dissipate energy. The location of the drop structure is determined by previous channel excavation.

Limited right-of-way between stations 8+50 and 26+21 causes the channel to curve repeatedly to conform to the three existing bridges. Trapezoidal concrete channel is used between these stations to eliminate erosion problems caused by the curve and sudden contraction and expansion effects underneath the bridges.

Floodwalls are added along the trapezoidal earth channel between stations 30+00 and 38+38 due to limited right-of-way.

Reach II: Rectangular concrete channel is used due to limited right-of-way.

The minimum freebroad was calculated as 0.2*He in accordance with Far West State for trapezoidal channels.

HEC-2 water surface profile computer program was used to calculate the water surface elevations through Reaches I and II. HEC-2 was developed by the U.S. Army Corps of Engineers Hydrologic Engineering Center to calculate water surface profiles for steady, gradually varied flow in natural and man-made channels. It has the capability of calculating both supercritical and subcritical flow profiles.

4. Channel Stability

The stability of the channel is calculated based on the methods described in TR-25, Design of Open Channels. The tractive power method is used to determine channel stability. Design values for soil parameters are taken from the Soil Report prepared by Soil Conservation Service.

GL:geb
A:lsc.doc

LOCATION & LAYOUT

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose 95118, Phone 265-2600

Page 1 of 1
Scope No. 40263D
By LAU
Date 10/23/89
Checked by ______ Date ______

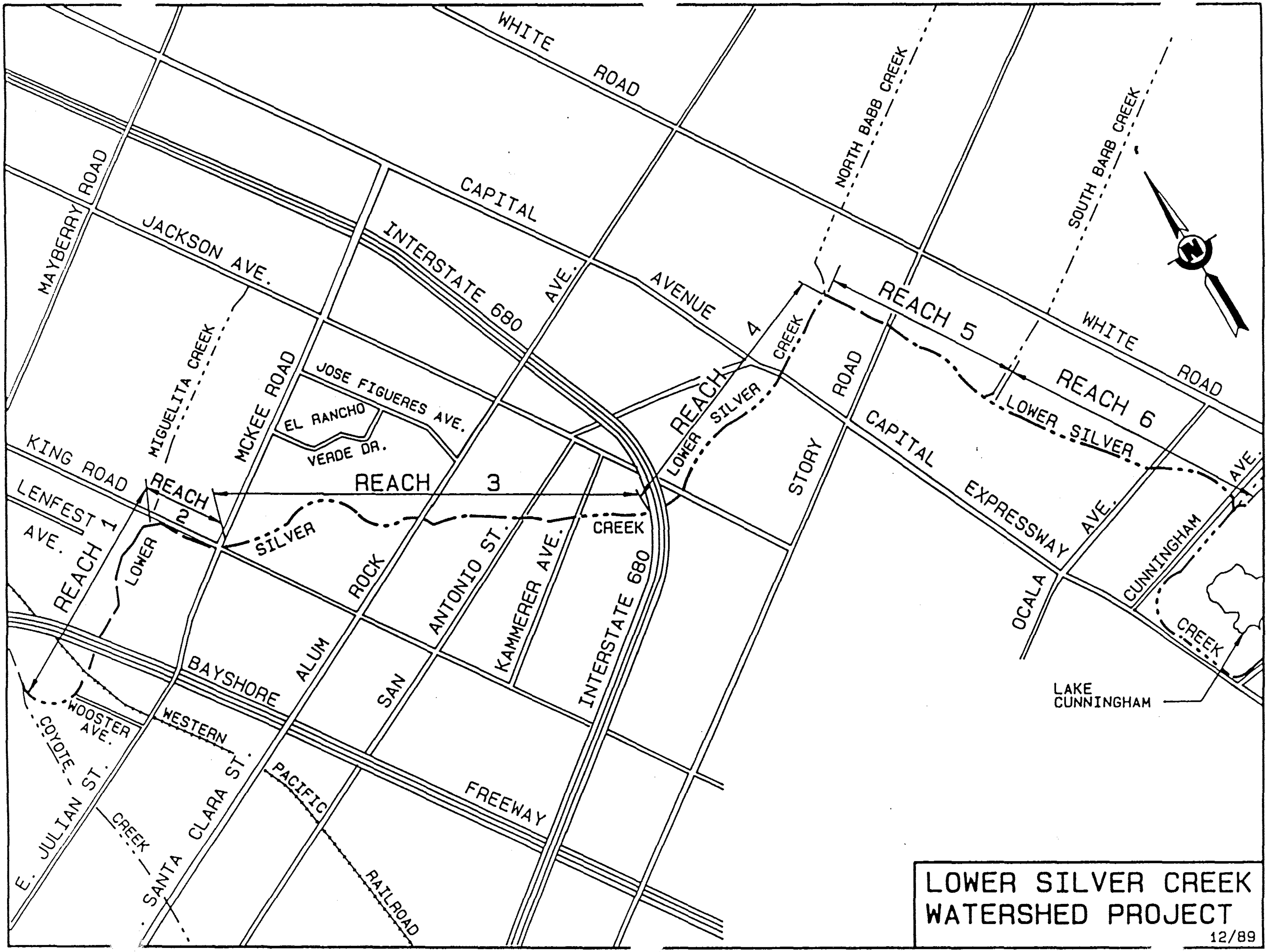
Subject LOWER SILVER CR. REACHES I & II

THE SANTA CLARA VALLEY WATER DISTRICT HAS ESTABLISHED A NEW CENTERLINE FOR LOWER SILVER CREEK REACHES I AND II.

THE NEW STATIONS ON THE NEW CENTERLINE ARE SLIGHTLY DIFFERENT THAN THE STATIONS ON THE FINAL WATERSHED PLAN (LET'S CALL THESE STATIONS "OLD" STATIONS).

THE TABLE BELOW SHOWS THE COMPARISON OF THE "OLD" STATIONS TO THE "NEW" STATIONS.

REACH	LOCATION DESCRIPTION	OLD STATION (FROM FINAL WATERSHED PLAN)	NEW STATION (BASED ON NEW CENTERLINE)
I	CONFLUENCE OF LOWER SILVER W/ COYOTE CR.	0+50	0+50
	5.1' DROP STRUCTURE	3+26	3+26
	D/S OF WOOSTER AVE. BRIDGE	10+40	10+42
	D/S OF W.P.R.R. BRIDGE	13+63	13+63
	D/S OF HWY 101 BRIDGE	18+58	18+69
II	MIGUELITA CR. 78" CMP OUTLET	40+50	41+00
	U/S OF KING & McKEE BOX CULVERT	53+25	54+33



LOWER SILVER CREEK WATERSHED PROJECT

12/89

PLAN & PROFILE

Subject ______

Page ____ of ____

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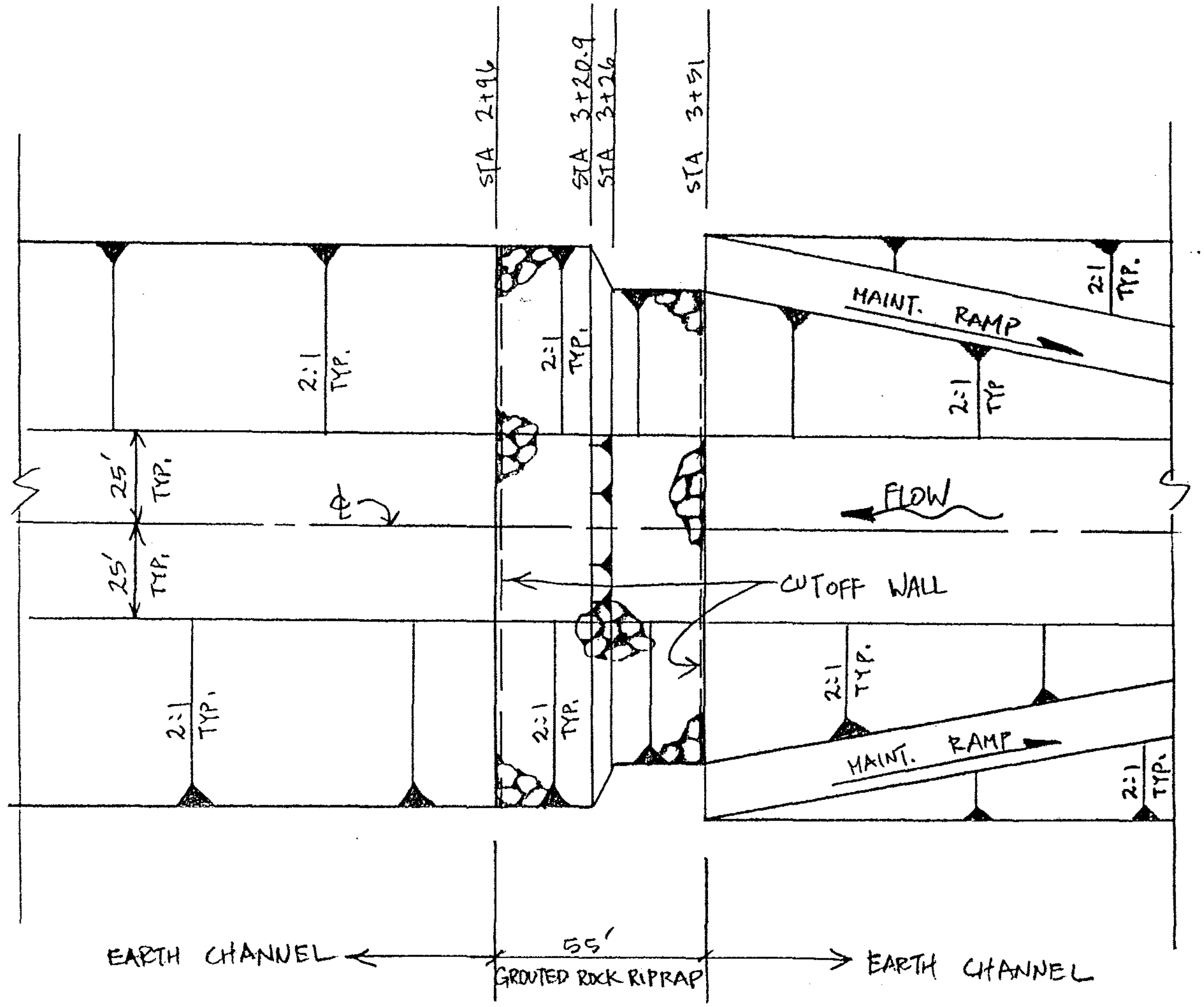
By ______

Date ______

Checked by ______ Date ______



5.1 FT DROP STRUCTURE

N.T.S.

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Subject Lower Silver Cr. I & II

Page ___ of ___

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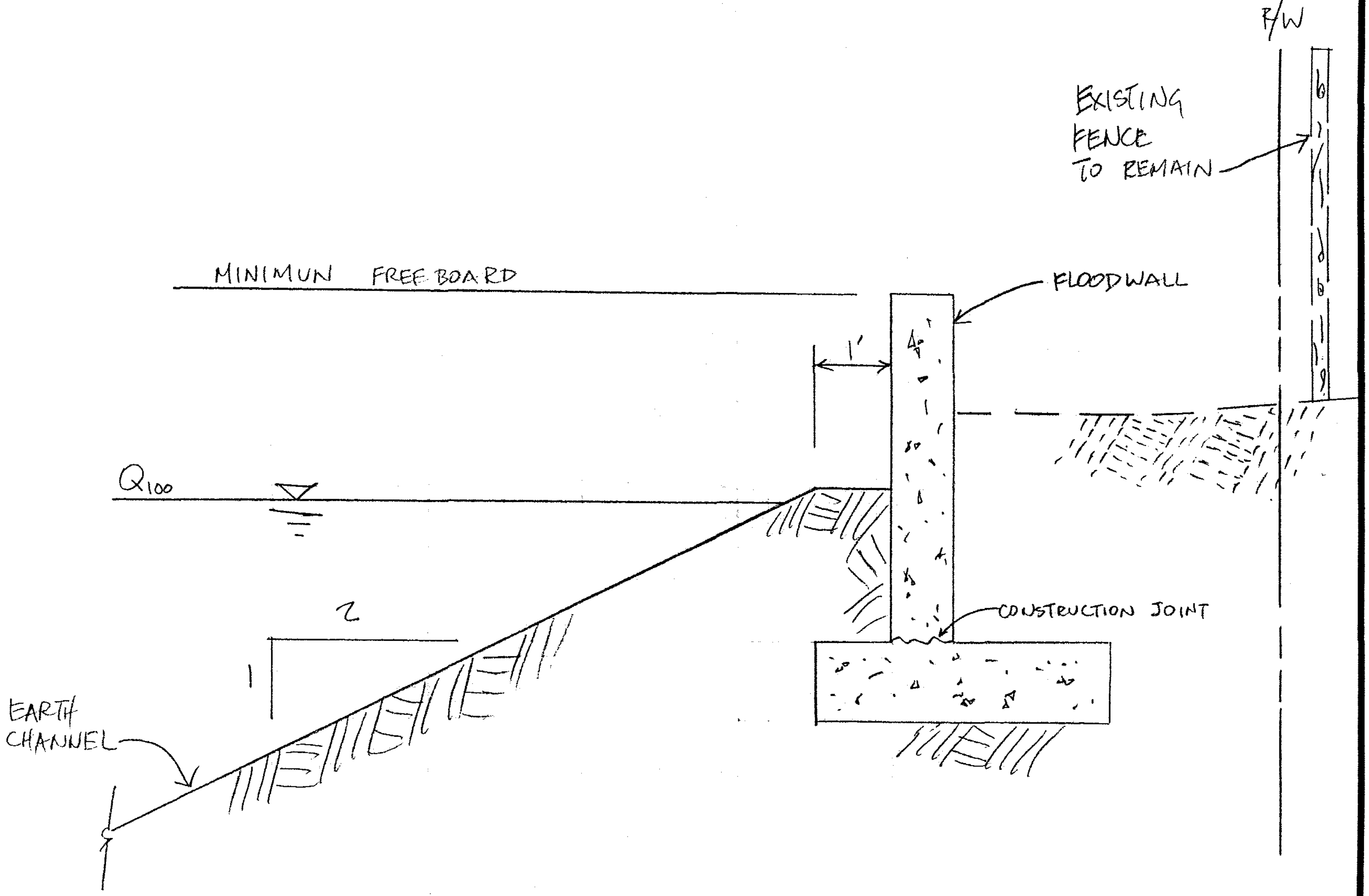
By ___

Date 11/1/89

Checked by ___ Date ___



TYPICAL SECTION - FLOODWALL @ 2:1 EARTH CHANNEL

N.T.S.

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Subject LOWER SILVER CR. I & II

Page ____ of ____
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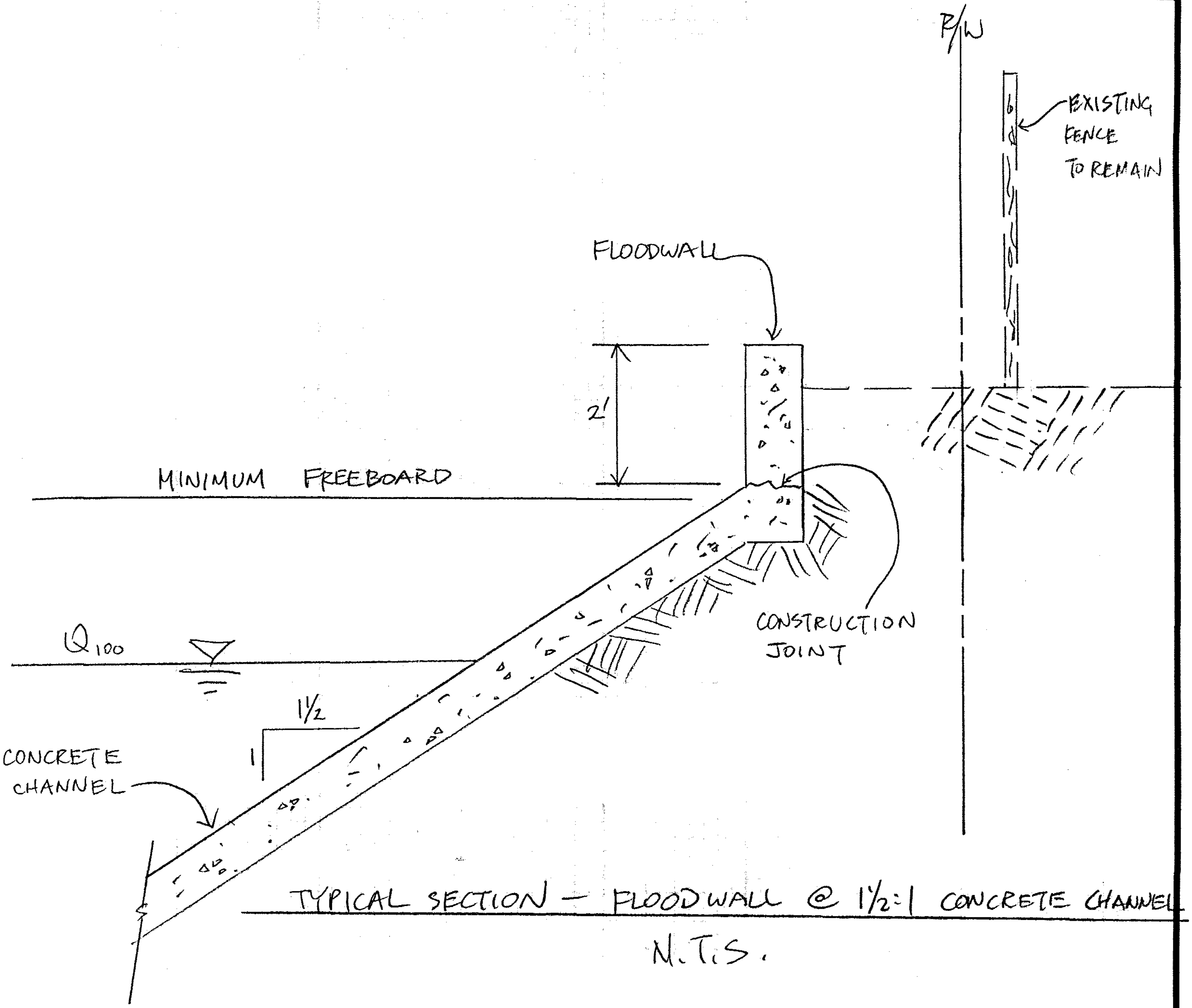

TYPICAL SECTION — FLOODWALL @ 1½:1 CONCRETE CHANNEL

N.T.S.

FC 807

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Date 10/18/89
Checked by ______ Date ______

Subject LOWER SILVER CREEK, REACHES I & II

THE HYDROLOGY FOR REACHES I AND II ARE CALCULATED BY THE SOIL CONSERVATION SERVICE.

BELOW IS A SUMMARY TABLE OF THE MAY 5, 1989 LETTER WRITTEN TO THE SANTA CLARA VALLEY WATER DISTRICT FROM THE SOIL CONSERVATION SERVICE REGARDING THE HYDRAULIC DESIGN DATA.

COMPUTER RUN	OBJECTIVE	REACH	$Q_{1\%}$ *	$Q_{10\%}$ *	ELEVATION AT STA 0+50
1	CHECK CAPACITY FOR LEVEE FROM TAILWATER FROM COYOTE CR.	I	3600	—	83.4′
2	DESIGN CAPACITY	I	6100	—	80.2′
		II	5200	—	
3	CHECK STABILITY	I	—	4100	76.9′
		II	—	NOT REQUIRED	
4	CHECK STABILITY AT DROP STRUCT.	I	6100	—	CRITICAL DEPTH
5	CHECK STABILITY AT DROP STRUCT.	I	—	4100	CRITICAL DEPTH

* IN C.F.S.

United States
Department of
Agriculture

Soil
Conservation
Service

2121-C 2nd Street, Suite 102
Davis, CA 95616-5475
(916) 449-2814

5/10- CBW 4/
RKS
TKY

May 5, 1989

Mr. Bruce Wilson
Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Dear Bruce:

Re: Lower Silver Creek Watershed Project Hydraulic Design Data.

Enclosed is a summary of hydraulic design data needed for the Districts design of Reach 1, and 2 for Lower Silver Creek. A grouted rock riprap drop structure is identified in the Lower Silver Creek Watershed Plan for Reach 1 Information on the recommended geometry is also included. Please contact Jim Chapman, Phone (916) 449-2808, if there are any questions or if additional information is needed.

Sincerely,

Harold Hungfield, act'g
CHARLES K. DAVIS
State Conservation Engineer

Enclosures

4709 '89 MAY 10 PM2:56

Lower Silver Creek Watershed
Hydraulic Design Data Reach No. 1 Station 0+50 to Station 40+50

1. Design Capacity for levees at outlet of Lower Silver Creek.

   A. Objective: Contain flood water from Coyote Creek and Lower Silver Creek within the Lower Silver Creek levees without freeboard.

   B. Data: Coyote Creek Q (1%) = 14,500 cfs. Water surface elevation of 83.4 at confluence of Lower Silver Creek (Station 0+50) with Coyote Creek. Lower Silver Creek Q = 3,600 cfs.

2. Design capacity for Lower Silver Creek Channel.

   A. Objective: Contain flood water from Lower Silver Creek within the channel with freeboard.

   B. Data: Lower Silver Creek Q (1%) = 6,100 cfs water surface elevation 80.2 at Lower Silver Creek Station 0+50.

3. Channel Stability for Lower Silver Creek.

   A. Objective: Design stable channel for Lower Silver Creek for both the As-Built and aged condition.

   B. Data: As-Built condition

   Lower Silver Creek Q (10%) = 4,100 cfs with water surface elevation 76.9 at Station 0 + 50.

   Aged Condition

   Lower Silver Creek Q (1%) = 6,100 cfs with water surface elevation 80.2 at Station 0 + 50.

4. Check Channel Stability upstream of grouted rock riprap drop structure assuming no tailwater in Coyote Creek.

   A. Objective: Check channel stability in Lower Silver Creek without tailwater in Coyote Creek.

   B. Data: Lower Silver Creek Q (10%) = 4,100 cfs with the water surface elevation at critical depth at the crest of the grouted rock riprap chute.

Hydraulic Design Data Reach No. 2
Station 40+50 to Station 53 + 25

1. Design Capacity of Lower Silver Creek Channel.

   A. Objective: Contain flood water from Lower Silver Creek within the channel with freeboard.

   B. Data: Lower Silver Creek Q (1%) = 5,200 cfs upstream of confluence with Miguelito Creek. The Watershed Plan, Table 3B incorrectly identified Q(1%) = 6,100 cfs.

2. Channel stability design will not be required for this reach of channel due to the rectangular, reinforced concrete lining.

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose 95118, Phone 265-2600

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Scope No. 40263D
By LAU
Date 7/24/89
Subject LOWER SILVER CREEK, REACHES I & II
Checked by Date

ALTERNATIVES

THREE ALTERNATIVES WERE COMPARED AND ANALYZED FOR HYDRAULIC, ENVIRONMENTAL, AND ECONOMIC EFFECTIVNESS.

THESE ALTERNATIVES ARE:

ALTERNATIVE 1 ⇒ NO PROJECT
ALTERNATIVE 2 ⇒ NONSTRUCTURAL FLOODPLAIN PROTECTION
ALTERNATIVE 3 ⇒ CHANNEL WORK AND FLOODPROOFING

THESE ALTERNATIVES ARE DESCRIBED IN THE "LOWER SILVER CREEK, FINAL WATERSHED PLAN AND ENVIRONMENTAL IMPACT STATEMENT/REPORT, JULY, 1983"

THE RECOMMENDED PLAN DESCRIBED IN THE FINAL WATERSHED PLAN IS:

ALTERNATIVE 3 ⇒ CHANNEL WORK AND FLOODPROOFING

HYDRAULIC DESIGN

REACH I (Confluence of Lower Silver Creek and Coyote Creek to Miguelita Creek outlet)

Reach I will be design for Q(100), channel capacity, as set forth in the Lower Silver Creek, Final Watershed Plan.

Q(100) = 6100 c.f.s.
Q(10) = 4100 c.f.s.

Q(10) will be used to check the stability of the channel. The beginning water surface elevation for Q(100) and Q(10) are 80.2 ft. and 76.9 ft. respectively and located at STA 0+50. These elevations were calculated by the Soil Conservation Service (SCS).

The channel invert elevation at STA 0+50 is 59.3 ft. This elevation is different from Final Watershed Plan which shows 61.0 ft. The purpose of the change is to lower the water surface elevation, thus lowering the levee elevation. This lower levee elevation will required less right-of-way.

Reach I design consisted of one 5.1 ft. grouted rock drop structure, 0.37 miles of excavated trapezoidal earth channel, 0.34 miles of trapezoidal concrete channel, and 0.05 miles of rectangular concrete channel.

The project starts at STA 1+96 where the new channel conforms with the existing channel. The channel invert slope starts at 0.0006 with a base width of 50 ft. The side slope of the trapezoidal earth channel is 2:1. These values were determined by SCS and are shown in the Final Watershed Plan.

A grouted rock drop structure at STA 3+26 will be installed for channel stability.

A sharp channel bend from STA 7+50 to STA 8+50 will be protected by placing loose rock riprap to help prevent erosion.

The channel will be going beneath three existing bridges, Wooster Avenue Bridge, Western Pacific Railroad Bridge, and Highway 101 Bridge. In an effort not to rebuilt these bridges the new channel will have to curve repeatedly to conform to these existing bridges. The channel will also have a sudden contraction and expansion effect underneath the bridges. To protect the bridges and channel from erosion, it is necessary to use trapezoidal concrete channel along STA 8+50 to STA 26+21. The channel invert slope will be steepened from 0.0006 to 0.002 to reduce excavation. Limited right-of-way will reduce the base width to 37 ft. at stations 8+50 to 13+83 and 35 ft. at stations 14+81 to 24+99. Side slope for all trapezoidal concrete channel will be 1-1/2:1. To allow the earthen channel upstream of STA 26+21 to be incised, the invert slope will be reduce to 0.001 at STA 20+57 to STA 26+21.

Trapezoidal earth channel with a 2:1 side slope will be use between STA 26+21 to STA 37+88. The channel invert slope will be 0.0005 with a base width of 60 ft. and two 15 ft. depressed maintenance roads. New floodwalls will be constructed on the right bank between stations 30+00 and 32+80 and both banks between stations 32+80 and 38+38 because of limited right-of-way. Twenty five feet of loose rock riprap will be installed at both ends of the trapezoidal earth channel to prevent erosion between earth and concrete transition.

REACH II (Miguelita Creek outlet to King and McKee Road Box Culvert)

Reach II will be design for Q(100), channel capacity, as set forth in the Lower Silver Creek, Final Watershed Plan.

Q(100) = 5200 c.f.s.

Due to a sharp channel bend and limited right of way, the entire reach will be rectangular concrete channel. The channel invert slope is 0.001 with a base width of 46 ft.

The rectangular concrete channel will conform to the existing King and McKee Road Box Culvert at STA 51+78.

Channel stability design will not be required for this reach of channel due to the rectangular concrete lining.

The Manning's "n" values were calculated by Santa Clara Valley Water District. These calculations are shown within this report.

HEC-2 water surface profile computer program was used to calculate the water surface through Reaches I and II. HEC-2 was developed by the United States Army Corps of Engineers Hydrologic Engineering Center to calculate water surface profiles for steady gradually varies flow in natural or man-made channels. It has the capability of calculating both super and subcritical flow profiles.

The freeboard was calculated as 0.2*He in accordance with Far West States for trapezoidal channel.

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose 95118, Phone 265-2600

Subject LOWER SILVER CR. REACHES I & II

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Date 3/29/89
Checked by ______ Date ______

MANNING'S "n" VALUE (REF. NEH-5, Supl. B)

FROM EIR PAGE 59.

EARTH CHANNEL, SECTION (a)

LEFT & RIGHT OVERBANK (AGED CONDITION)

STEP.		
1.	BASIC "n" FOR CHANNEL IN EARTH	= 0.020
2.	DEGREE OF IRREGULARITY (SMOOTH)	= 0.000
3.	SIZE AND SHAPE OF CROSS SECTION	= 0.000
4.	OBSTRUCTIONS (NONE)	= 0.000
5.	VEGETATION (LOW)	= 0.010
6.	MEANDER (APPRECIATE)	= 0.005
	TOTAL=	0.035

MAIN CHANNEL (AGED CONDITION)

STEP.		
1.	BASIC "n" FOR CHANNEL IN EARTH	= 0.020
2.	DEGREE OF IRREGULARITY (SMOOTH)	= 0.000
3.	SIZE AND SHAPE OF CROSS SECTION	= 0.000
4.	OBSTRUCTIONS (NONE)	= 0.000
5.	VEGETATION (MEDIUM)	= 0.020
6.	MEANDER (APPRECIABLE)	= 0.006
	TOTAL=	0.046

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Subject LOWER SILVER CR. REACHES I & II

LEFT & RIGHT OVERBANK, MAIN CHANNEL (AS-BUILT)

STEP.	1. BASIC "n" FOR CHANNEL IN EARTH	=	0.020
	2. DEGREE OF IRREGULARITY (SMOOTH)	=	0.000
	3. SIZE AND SHAPE OF CROSS SECTION	=	0.000
	4. OBSTRUCTIONS (NONE)	=	0.000
	5. VEGETATION (LOW)	=	0.005
	6. MEANDER (APPRECIABLE)	=	0.004
		TOTAL =	0.029

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose 95118, Phone 265-2600

Subject LOWER SILVER CR. REACHES I & II

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Date 3/29/89
Checked by ______ Date ______

EARTH CHANNEL, SECTION (C)

LEFT & RIGHT OVERBANK (AGED CONDITION)

STEP. 1. BASIC "n" FOR CHANNEL IN EARTH = 0.020
2. DEGREE OF IRREGULARITY (SMOOTH) = 0.000
3. SIZE AND SHAPE OF CROSS SECTION = 0.000
4. OBSTRUCTIONS (NONE) = 0.000
5. VEGETATION (LOW) = 0.010
6. MEANDER (MINOR) = 0.000

TOTAL = 0.030

MAIN CHANNEL (AGED CONDITION)

STEP. 1. BASIC "n" FOR CHANNEL IN EARTH = 0.020
2. DEGREE OF IRREGULARITY (SMOOTH) = 0.000
3. SIZE AND SHAPE OF CROSS SECTION = 0.000
4. OBSTRUCTIONS (NONE) = 0.000
5. VEGETATION (MEDIUM) = 0.020
6. MEANDER (MINOR) = 0.000

TOTAL = 0.040

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Subject LOWER SILVER CR. REACHES I & II
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LEFT & RIGHT OVERBANK, MAIN CHANNEL (AS-BUILT)

STEP. 1. BASIC "n" FOR CHANNEL IN EARTH = 0.020
2. DEGREE OF IRREGULARITY (SMOOTH) = 0.000
3. SIZE AND SHAPE OF CROSS SECTION = 0.000
4. OBSTRUCTIONS (NONE) = 0.000
5. VEGETATION (LOW) = 0.005
6. MEANDER (MINOR) = 0.000

TOTAL = 0.025

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CONCRETE CHANNEL (REF. KING'S HANDBOOK)

AGED CONDITION ⇒ $\eta = 0.015$

AS-BUILT ⇒ $\eta = 0.015$

GROUTED ROCK RIPRAP

AGED CONDITION ⇒ $\eta = 0.030$

AS-BUILT ⇒ $\eta = 0.030$

LOOSE ROCK RIPRAP

AGED CONDITION ⇒ $\eta = 0.035$

AS-BUILT ⇒ $\eta = 0.035$

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11********************************************************                                        *************************************
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 *  WATER SURFACE PROFILES                          *                                            *  U.S. ARMY CORPS OF ENGINEERS
*
 *  VERSION OF NOVEMBER 1976                        *                                            *  THE HYDROLOGIC ENGINEERING CENTER
*
 *  UPDATED MAY 1984                                *                                            *  609 SECOND STREET, SUITE D
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 *  IBM-PC-XT VERSION AUGUST 1985                   *                                            *  DAVIS, CALIFORNIA 95616
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  11-28-89     11:01:55                                                                                          PAGE    1



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   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
   IBM-PC-XT VERSION AUGUST 1985
 **************************************************


C
T1      LOWER SILVER CREEK, REACH 1 & 2
T2      100-YEAR EVENT (CHECK BACKFLOW FROM COYOTE CREEK)
T3      PRELIMINARY RUN #1

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

       0.        2.        0.        0.   .000000       .00        .0        0.    83.400      .000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

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J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38.000    23.000    24.000    42.000    53.000    54.000    43.000     8.000     1.000    25.000


      4.000    26.000     3.000      .000      .000      .000      .000      .000      .000      .000
 QT      1.000  3600.000      .000      .000       .000      .000      .000      .000      .000      .000
           CROSS SECTIONS LOOKING UPSTREAM
           AT CONFLUENCE WITH COYOTE CREEK
 X1     50.000     7.000   925.000  1075.000       .000      .000      .000      .000      .000      .000
 X3     10.000      .000      .000   910.000       .000  1090.000      .000    84.300    84.300      .000
 GR     84.300   910.000    84.300   925.000     59.300   975.000    59.300  1000.000    59.300  1025.000
 GR     84.300  1075.000    84.300  1090.000       .000      .000      .000      .000      .000      .000

 NC       .030      .030      .030      .100       .300      .000      .000      .000      .000      .000
 X1    296.000     7.000   925.000  1075.000    246.000   246.000   246.000      .000      .000      .000
 X3     10.000      .000      .000   910.000       .000  1090.000      .000    84.450    84.450      .000
 GR     84.450   910.000    84.450   925.000     59.450   975.000    59.450  1000.000    59.450  1025.000
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 X1    321.000     7.000   925.000  1075.000     25.000    25.000    25.000      .000      .000      .000
 X3     10.000      .000      .000   910.000       .000  1090.000      .000    84.460    84.460      .000
 GR     84.460   910.000    84.460   925.000     59.460   975.000    59.460  1000.000    59.460  1025.000
 GR     84.460  1075.000    84.460  1090.000       .000      .000      .000      .000      .000      .000
1
  11-28-89     11:01:55                                                                           PAGE    2



           5.1' GROUTED ROCK DROP STRUCTURE
 X1    326.000     7.000   937.200  1062.800     11.200    11.200     5.000      .000      .000      .000
 X3     10.000      .000      .000   915.000       .000  1085.000      .000    83.460     8.460      .000
 GR     83.460   915.000    83.460   937.200     64.560   975.000    64.560  1000.000    64.560  1025.000
 GR     83.460  1062.800    83.460  1085.000       .000      .000      .000      .000      .000      .000

 NC       .035      .035      .046      .100       .300      .000      .000      .000      .000      .000
 X1    350.900     9.000   937.200  1062.800     24.900    24.900    24.900      .000      .000      .000
 X3     10.000      .000      .000   915.000       .000  1085.000      .000    83.480    83.480      .000
 GR     83.480   915.000    83.480   922.200     83.480   937.200    64.580   975.000    64.580  1000.000
 GR     64.580  1025.000    83.480  1062.800     84.580  1077.800    83.480  1085.000      .000      .000

 X1    351.000     9.000   922.200  1077.800     15.100    15.100      .100      .000      .000      .000
 X3     10.000      .000      .000   915.000       .000  1085.000      .000    83.480    83.480      .000
 GR     83.480   915.000    83.480   922.200     83.480   937.200    64.580   975.000    64.580  1000.000
 GR     64.580  1025.000    83.480  1062.800     83.480  1077.800    83.480  1085.000      .000      .000

 X1    485.000    11.000   922.200  1077.800    134.000   134.000   134.000      .000      .000      .000
 X3     10.000      .000      .000   915.000       .000  1085.000      .000    83.560    83.560      .000
 GR     83.560   915.000    83.560   922.200     68.460   952.000    68.460   967.000    64.660   975.000
 GR     64.660  1000.000    64.660  1025.000     68.460  1033.000    68.460  1048.000    83.560  1077.800
 GR     83.560  1085.000      .000      .000       .000      .000      .000      .000      .000      .000

 NC       .035      .035      .035      .100       .300      .000      .000      .000      .000      .000
 X1    750.000    11.000   922.200  1077.800    244.620   285.380   265.000      .000      .000      .000
 X3     10.000      .000      .000   915.000       .000  1085.000      .000    83.720    83.720      .000
 GR     83.720   915.000    83.720   922.200     68.820   952.000    68.820   967.000    64.820   975.000
 GR     64.820  1000.000    64.820  1025.000     68.820  1033.000    68.820  1048.000    83.720  1077.800
 GR     83.720  1085.000      .000      .000       .000      .000      .000      .000      .000      .000

           BEGIN CONCRETE LINING
 X1    850.000     7.000   922.200  1077.800     92.310   107.690   100.000      .000      .000      .000
 X3     10.000      .000      .000   922.200       .000  1077.800      .000    83.780    83.780      .000
 GR     83.780   922.200    83.780   937.200     64.880   975.000    64.880  1000.000    64.880  1025.000
 GR     83.780  1062.800    83.780  1077.800       .000      .000      .000      .000      .000      .000

 NC       .015      .015      .015      .300       .500      .000      .000      .000      .000      .000
 X1    850.100     7.000   922.200  1077.800     15.100    15.100      .100      .000      .000      .000
 X3     10.000      .000      .000   922.200       .000  1077.800      .000    83.780    83.780      .000
 GR     83.780   922.200    83.780   937.200     65.380   975.000    64.880  1000.000    65.380  1025.000
 GR     83.780  1062.800    83.780  1077.800       .000      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   938.150      .000  1061.850      .000    84.040    84.040      .000
 GR    84.040   938.150    84.040   953.150    65.640   981.500    65.140  1000.000    65.640  1018.500
 GR    84.040  1046.850    84.040  1061.850      .000      .000      .000      .000      .000      .000

 X1   978.620     5.000   953.150  1046.850    15.100    15.100      .090      .000      .000      .000
 X3    10.000      .000      .000   953.150      .000  1046.850      .000    84.040    84.040      .000
 GR    84.040   953.150    65.640   981.500    65.140  1000.000    65.640  1018.500    84.040  1046.850
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 X1  1027.300     5.000   953.150  1046.850    38.280    59.070    48.680      .000      .000      .000
 X3    10.000      .000      .000   953.150      .000  1046.850      .000    84.140    84.140      .000
 GR    84.140   953.150    65.740   981.500    65.240  1000.000    65.740  1018.500    84.140  1046.850

 X1  1042.000     5.000   967.330  1032.670    14.700    14.700    14.700      .000      .000      .000
 X3    10.000      .000      .000   967.330      .000  1032.670      .000    84.170    84.170      .000
 GR    84.170   967.330    65.770   981.500    65.270  1000.000    65.770  1018.500    84.170  1032.670

          WOOSTER AVENUE BRIDGE
 X1  1042.100     7.000   971.500  1028.500     3.510     3.370      .100      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    85.430    85.250      .000
 GR    85.430   971.500    78.600   971.510    65.770   981.500    65.270  1000.000    65.770  1018.500
 GR    78.600  1028.490    85.250  1028.500      .000      .000      .000      .000      .000      .000

 SB     1.050     1.560     2.700    57.000    37.000     2.670   994.290      .750      .000      .000
 X1  1079.800     7.000   971.500  1028.500    37.700    37.700    37.700      .000      .000      .000
 X2      .000      .000     1.000    85.480    86.920      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    85.450    85.300      .000
 GR    85.440   971.500    78.680   971.510    65.850   981.500    65.350  1000.000    65.850  1018.500
 GR    78.680  1028.490    85.290  1028.500      .000      .000      .000      .000      .000      .000

 X1  1079.900     7.000   967.330  1032.670     3.430     3.320      .100      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1070.000      .000    84.200    84.200      .000
 GR    84.200   937.000    84.200   967.330    65.850   981.500    65.350  1000.000    65.850  1018.500
 GR    84.200  1032.670    84.200  1070.000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  1110.000     7.000   953.150  1046.550    34.900    34.900    30.100      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1070.000      .000    84.310    84.310      .000
 GR    84.310   937.000    84.310   953.150    65.910   981.500    65.410  1000.000    65.910  1018.500
 GR    84.310  1046.550    84.310  1070.000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  1262.900      .000      .000      .000   152.870   152.870   152.870      .000      .310      .000

 X1  1338.100      .000      .000      .000    75.200    75.200    75.200      .000      .150      .000

          WESTERN PACIFIC RAILROAD BRIDGE
 X1  1363.000     7.000   969.500  1030.500    39.000    21.000    24.900      .000      .000      .000
 X3    10.000      .000      .000   969.500      .000  1030.500      .000    84.820    84.820      .000
 GR    84.820   969.500    80.420   969.510    66.420   981.500    65.920  1000.000    66.420  1018.500
 GR    80.420  1030.490    84.820  1030.500      .000      .000      .000      .000      .000      .000

 SB     1.050     1.560     2.700    73.000    45.000     5.330  1212.840     1.000      .000      .000
 X1  1383.000     7.000   969.500  1030.500    20.000    20.000    20.000      .000      .000      .000
 X2      .000      .000     1.000    85.410    88.660      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   969.500      .000  1030.500      .000    84.860    84.860      .000
 GR    84.860   969.500    80.460   969.510    66.460   981.500    65.960  1000.000    66.460  1022.500
 GR    80.460  1030.490    84.860  1030.500      .000      .000      .000      .000      .000      .000
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 X1  1400.000     6.000   970.000  1020.000     3.000    23.000    17.000      .000      .000      .000
 X3    10.000      .000      .000   970.000      .000  1020.000      .000    84.870    84.890      .000
 GR    84.870   970.000    80.470   970.010    66.490   982.500    65.990  1000.000    66.490  1017.500
 GR    84.890  1020.000      .000      .000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  1481.000     7.000   954.150  1045.850    87.000    80.000    81.000      .000      .000      .000
 X3    10.000      .000      .000   923.500      .000  1047.500      .000    85.050    85.050      .000
 GR    85.050   923.500    85.050   954.150    66.650   982.500    66.150  1000.000    66.650  1017.500
 GR    85.050  1045.850    85.050  1047.500      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  1788.000      .000      .000      .000   307.000   307.000   307.000      .000      .610      .000

 X1  1834.000     7.000   966.000  1034.000    56.000    36.000    46.000      .000      .000      .000
 X3    10.000      .000      .000   966.000      .000  1034.000      .000    84.000    84.000      .000
 GR    84.000   966.000    80.120   966.010    69.120   982.500    69.120  1000.000    69.120  1017.500
 GR    80.120  1033.990    84.000  1034.000      .000      .000      .000      .000      .000      .000
 EJ      .000      .000      .000      .000      .000      .000      .000      .000      .000      .000
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *PROF 1

 CCHV=    .100 CEHV=    .300
 *SECNO 50.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.30 ELREA=       84.30

          CROSS SECTIONS LOOKING UPSTREAM
          AT CONFLUENCE WITH COYOTE CREEK
     50.00    24.10    83.40      .00    83.40    83.44      .04      .00      .00    84.30
     3600.       0.    3600.       0.       0.    2367.       0.       0.       0.    84.30
       .00      .00     1.52      .00     .035     .046     .035     .000    59.30   926.80
   .000060       0.       0.       0.        0        0        0      .00   146.40  1073.20
0
 CCHV=    .100 CEHV=    .300
 *SECNO 296.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.45 ELREA=       84.45

    296.00    23.96    83.41      .00      .00    83.45      .04      .01      .00    84.45
     3600.       0.    3600.       0.       0.    2347.       0.      13.       1.    84.45
       .04      .00     1.53      .00     .030     .030     .030     .000    59.45   927.07
   .000026     246.     246.     246.        0        0        0      .00   145.86  1072.93
0
 *SECNO 321.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.46 ELREA=       84.46

    321.00    23.95    83.41      .00      .00    83.45      .04      .00      .00    84.46
  .000026      25.      25.      25.        0        0        0      .00   145.80  1072.90
0
1
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    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 *SECNO 326.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.46 ELREA=        8.46

        5.1' GROUTED ROCK DROP STRUCTURE
   326.00    18.82    83.38      .00      .00    83.46      .07      .00      .01    83.46
    3600.       0.    3600.       0.       0.    1650.       0.      15.       1.    83.46
      .05      .00     2.18      .00     .030     .030     .030     .000    64.56   937.35
  .000068      11.       5.      11.        2        0        0      .00   125.29  1062.65
0
 CCHV=    .100 CEHV=    .300
 *SECNO 350.900

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.48 ELREA=       83.48

   350.90    18.81    83.39      .00      .00    83.46      .07      .00      .00    83.48
    3600.       0.    3600.       0.       0.    1647.       0.      16.       1.    83.48
      .05      .00     2.19      .00     .035     .046     .035     .000    64.58   937.39
  .000161      25.      25.      25.        0        0        0      .00   125.22  1062.61
0
 *SECNO 351.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.48 ELREA=       83.48

   351.00    18.81    83.39      .00      .00    83.46      .07      .00      .00    83.48
    3600.       0.    3600.       0.       0.    1648.       0.      16.       1.    83.48
      .05      .00     2.18      .00     .035     .046     .035     .000    64.58   937.39
  .000161      15.       0.      15.        0        0        0      .00   125.23  1062.61
0
 *SECNO 485.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000
1
  11-28-89     11:01:55                                                                                          PAGE    7


    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.56 ELREA=       83.56

   485.00    18.77    83.43      .00      .00    83.48      .05      .02      .00    83.56
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       .07       .00      1.71       .00      .035      .040      .035      .000     64.85    922.45
   .000094      134.      134.      134.         2         0         0       .00    155.10   1077.55
0
 CCHV=     .100 CEHV=     .300
 *SECNO 750.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      83.72 ELREA=      83.72

    750.00     18.63     83.45       .00       .00     83.50       .05       .02       .00     83.72
     3600.        0.     3600.        0.        0.     2066.        0.       34.        2.     83.72
       .12       .00      1.74       .00      .035      .035      .035      .000     64.82    922.72
   .000057      245.      265.      285.         1         0         0       .00    154.56   1077.28
0
 *SECNO 850.000

 3470 ENCROACHMENT STATIONS=     922.2    1077.8  TYPE=     1  TARGET=     155.600

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      83.78 ELREA=      83.78

         BEGIN CONCRETE LINING
    850.00     18.56     83.44       .00       .00     83.52       .08       .01       .01     83.78
     3600.        0.     3600.        0.        0.     1617.        0.       38.        3. 100000.00
       .13       .00      2.23       .00      .035      .035      .035      .000     64.88    937.88
   .000098       92.      100.      108.         2         0         0       .00    124.23   1062.12
0
 CCHV=     .300 CEHV=     .500
 *SECNO 850.100

 3470 ENCROACHMENT STATIONS=     922.2    1077.8  TYPE=     1  TARGET=     155.600

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      83.78 ELREA=      83.78

    850.10     18.56     83.44       .00       .00     83.52       .08       .00       .00     83.78
     3600.        0.     3600.        0.        0.     1585.        0.       39.        3. 100000.00
       .13       .00      2.27       .00      .015      .015      .015      .000     64.88    937.90
   .000019       15.        0.       15.         0         0         0       .00    124.20   1062.10
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 978.530

 3470 ENCROACHMENT STATIONS=     938.2    1061.8  TYPE=     1  TARGET=     123.700

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      84.04 ELREA=      84.04

    978.53     18.26     83.40       .00       .00     83.56       .15       .00       .04     84.04
     3600.        0.     3600.        0.        0.     1153.        0.       43.        3. 100000.00
       .14       .00      3.12       .00      .015      .015      .015      .000     65.14    954.13
   .000039      129.      128.      129.         2         0         0       .00     91.74   1045.87
0
 *SECNO 978.620

 3470 ENCROACHMENT STATIONS=     953.2    1046.8  TYPE=     1  TARGET=      93.700

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      84.04 ELREA=      84.04
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     3600.        0.    3600.       0.        0.     1153.        0.       43.        3. 100000.00
       .14       .00     3.12      .00      .015      .015      .015      .000     65.14    954.13
   .000039       15.       0.      15.         0         0         0       .00     91.74   1045.87
0
 *SECNO 1027.300

 3470 ENCROACHMENT STATIONS=     953.2    1046.8  TYPE=     1  TARGET=      93.700

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.14 ELREA=       84.14

   1027.30     18.16    83.40      .00       .00     83.56       .15       .00       .00     84.14
     3600.        0.    3600.       0.        0.     1144.        0.       44.        3. 100000.00
       .15       .00     3.15      .00      .015      .015      .015      .000     65.24    954.28
   .000040       38.      49.      59.         0         0         0       .00     91.44   1045.72
0
 *SECNO 1042.000

 3470 ENCROACHMENT STATIONS=     967.3    1032.7  TYPE=     1  TARGET=      65.340

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.17 ELREA=       84.17

   1042.00     18.09    83.36      .00       .00     83.61       .25       .00       .05     84.17
     3600.        0.    3600.       0.        0.      898.        0.       44.        3. 100000.00
       .15       .00     4.01      .00      .015      .015      .015      .000     65.27    967.96
   .000067       15.      15.      15.         2         0         0       .00     64.09   1032.04
0
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 1042.100

 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.43 ELREA=       85.25

         WOOSTER AVENUE BRIDGE
   1042.10     18.08    83.35      .00       .00     83.61       .26       .00       .00     85.43
     3600.        0.    3600.       0.        0.      883.        0.       44.        3. 100000.00
       .15       .00     4.08      .00      .015      .015      .015      .000     65.27    971.50
   .000068        4.       0.       3.         0         0         0       .00     56.99   1028.50
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       1.05       1.56       2.70      57.00      37.00       2.67     994.29        .75      65.27      65.27

 *SECNO 1079.800
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     83.33 BRIDGE VELOCITY=,      4.16      CALCULATED CHANNEL AREA=,      864.

  EGPRS      EGLWC       H3        QWEIR       QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                    AREA
       .00      83.63       .02        0.     3600.       994.     1000.       85.48      86.92
 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.45 ELREA=       85.30

   1079.80    18.02    83.37      .00      .00    83.63      .26      .02      .00    85.44
     3600.       0.    3600.       0.       0.     879.       0.      45.       3. 100000.00
       .15      .00     4.09      .00     .000     .015     .000     .000    65.35    971.50
   .000069      38.      38.      38.        0        0        0      .00    56.99   1028.50
0
 *SECNO 1079.900

 3470 ENCROACHMENT STATIONS=     937.0    1070.0  TYPE=     1  TARGET=     133.000
1
  11-28-89     11:01:55                                                                          PAGE   10


     SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.20 ELREA=       84.20

   1079.90    18.03    83.38      .00      .00    83.63      .25      .00      .00    84.20
     3600.       0.    3600.       0.       0.     895.       0.      45.       3.    84.20
       .15      .00     4.02      .00     .015     .015     .015     .000    65.35   967.97
   .000067       3.       0.       3.        1        0        0      .00    64.07  1032.03
0
 CCHV=    .100 CEHV=    .300
 *SECNO 1110.000

 3470 ENCROACHMENT STATIONS=     937.0    1070.0  TYPE=     1  TARGET=     133.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.31 ELREA=       84.31

   1110.00    18.08    83.49      .00      .00    83.64      .16      .00      .01    84.31
     3600.       0.    3600.       0.       0.    1133.       0.      46.       3.    84.31
       .15      .00     3.18      .00     .015     .015     .015     .000    65.41   954.42
   .000041      35.      30.      35.        2        0        0      .00    90.88  1045.30
0
 CCHV=    .300 CEHV=    .500
 *SECNO 1262.900
   1262.90    17.77    83.49      .00      .00    83.65      .16      .01      .00    84.62
     3600.       0.    3600.       0.       0.    1106.       0.      50.       4.    84.62
       .16      .00     3.26      .00     .015     .015     .015     .000    65.72   954.88
   .000044     153.     153.     153.        0        0        0      .00    89.96  1044.84
0
 *SECNO 1338.100
   1338.10    17.62    83.49      .00      .00    83.66      .17      .00      .00    84.77
     3600.       0.    3600.       0.       0.    1092.       0.      51.       4.    84.77
       .17      .00     3.30      .00     .015     .015     .015     .000    65.87   955.12
   .000045      75.      75.      75.        0        0        0      .00    89.49  1044.60
0
 *SECNO 1363.000

 3470 ENCROACHMENT STATIONS=     969.5    1030.5  TYPE=     1  TARGET=      61.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.82 ELREA=       84.82

1
  11-28-89     11:01:55                                                                          PAGE   11
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   1363.00    17.53    83.45      .00      .00    83.71      .26      .00      .05    84.82
    3600.        0.    3600.       0.       0.     880.       0.      52.       4. 100000.00
      .17       .00     4.09      .00     .015     .015     .015     .000    65.92   969.50
   .000070       39.      25.      21.        2        0        0      .00    60.99  1030.50
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
        1.05      1.56      2.70     73.00     45.00      5.33   1212.84      1.00     65.92     65.92

 *SECNO 1383.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     83.41 BRIDGE VELOCITY=,      3.60      CALCULATED CHANNEL AREA=,     1000.

  EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID     ELLC     ELTRD
                                                                AREA
       .00     83.72       .03        0.     3600.     1213.     1153.      85.41     88.66



 3470 ENCROACHMENT STATIONS=     969.5    1030.5  TYPE=     1  TARGET=      61.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.86 ELREA=       84.86

   1383.00    17.52    83.48      .00      .00    83.72      .24      .01      .00    84.86
    3600.        0.    3600.       0.       0.     908.       0.      52.       4. 100000.00
      .17       .00     3.96      .00     .000     .015     .000     .000    65.96   969.50
   .000064       20.      20.      20.        0        0        0      .00    60.99  1030.50
0
 *SECNO 1400.000

 3470 ENCROACHMENT STATIONS=     970.0    1020.0  TYPE=     1  TARGET=      50.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.87 ELREA=       84.89

   1400.00    17.43    83.42      .00      .00    83.78      .36      .00      .06    84.87
    3600.        0.    3600.       0.       0.     745.       0.      53.       4. 100000.00
      .17       .00     4.83      .00     .015     .015     .015     .000    65.99   970.00
   .000109        3.      17.      23.        2        0        0      .00    49.80  1019.80
0
 CCHV=    .100 CEHV=    .300
 *SECNO 1481.000

 3470 ENCROACHMENT STATIONS=     923.5    1047.5  TYPE=     1  TARGET=     124.000
1
  11-28-89     11:01:55                                                                                   PAGE   12


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.05 ELREA=       85.05

   1481.00    17.47    83.62      .00      .00    83.80      .18      .01      .02    85.05
    3600.        0.    3600.       0.       0.    1046.       0.      54.       4.    85.05
      .18       .00     3.44      .00     .015     .015     .015     .000    66.15   956.35
   .000051       87.      81.      80.        7        0        0      .00    87.29  1043.65
 #SECNO 1788.000
   1788.00    16.87    83.63      .00      .00    83.83      .20      .02      .01    85.66
     3600.       0.    3600.       0.       0.     995.       0.      62.       5.     85.66
       .20      .00     3.62      .00     .015     .015     .015     .000    66.76   957.27
   .000058     307.     307.     307.        1        0        0      .00    85.46  1042.73
0
 #SECNO 1834.000

 3470 ENCROACHMENT STATIONS=     966.0    1034.0  TYPE=     1  TARGET=      68.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.00 ELREA=       84.00

   1834.00    14.46    83.58      .00      .00    83.89      .31      .00      .06    84.00
     3600.       0.    3600.       0.       0.     801.       0.      63.       5. 100000.00
       .21      .00     4.49      .00     .015     .015     .015     .000    69.12   966.00
   .000098      56.      46.      36.        2        0        0      .00    68.00  1034.00
0
1
 PROFILE FOR STREAM  PRELIMINARY RUN #1



 PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA


 ELEVATION    55.       60.       65.       70.       75.       80.       85.       90.       95.      100.
     SECNO   CUMDIS

     50.00     0.  C        I.         .         .         .         .      E L.         .         .         .         .
              40.  C        I.         .         .         .         .      E L.         .         .         .         .
              80.  C        I.         .         .         .         .      E L.         .         .         .         .
             120.  C        I.         .         .         .         .      E L.         .         .         .         .
             160.  C        I.         .         .         .         .      E L.         .         .         .         .
             200.  C        I.         .         .         .         .      E L.         .         .         .         .
             240.  C        I.         .         .         .         .      E L.         .         .         .         .
    296.00   280.  C        I.         .         .         .         .      E L.         .         .         .         .
    321.00   320.  C        I.         .         .         .         .      E L.         .         .         .         .
    326.00   360.  C         .        I.         .         .         .      E  .         .         .         .         .
    350.90   400.  C         .        I.         .         .         .      E  .         .         .         .         .
    351.00   440.  C         .        I.         .         .         .      E  .         .         .         .         .
    485.00   480.  C         .        I.         .         .         .      E  .         .         .         .         .
             520.  C         .        I.         .         .         .      E  .         .         .         .         .
             560.  C         .        I.         .         .         .      E  .         .         .         .         .
             600.  C         .        I.         .         .         .      E  .         .         .         .         .
             640.  C         .         I         .         .         .      E  .         .         .         .         .
             680.  C         .         I         .         .         .      E  .         .         .         .         .
    750.00   720.  C         .         I         .         .         .      E  .         .         .         .         .
             760.  C         .         I         .         .         .      E  .         .         .         .         R
    850.00   800.  C         .         I         .         .         .      EL .         .         .         .         R
    850.10   840.  C         .         I         .         .         .      EL .         .         .         .         R
             880.  C         .         I         .         .         .      EL .         .         .         .         R
             920.  C         .         I         .         .         .      EL .         .         .         .         R
    978.53   960.  C         .         I         .         .         .      EL .         .         .         .         R
    978.62  1000.  C         .         I         .         .         .      EL .         .         .         .         R
   1027.30  1040.  C         .         I         .         .         .      EL .         .         .         .         R
   1042.00  1080.  C         .         .I        .         .         .      EL .         .         .         .         R
   1042.10  1120.  C         .         .I        .         .         .      E  .L        .         .         .         R
   1079.80  1160.  C         .         .I        .         .         .      E  .L        .         .         .         R
   1079.90  1200.  C         .         .I        .         .         .      EL .         .         .         .         .
   1110.00  1240.  C         .         .I        .         .         .      E L.         .         .         .         .
   1262.90  1280.  C         .         .I        .         .         .      E L.         .         .         .         .
   1338.10  1320.  C         .         . I       .         .         .      E  L         .         .         .         .
   1363.00  1360.  C         .         . I       .         .         .      E  L         .         .         .         R
   1383.00  1400.  C         .         . I       .         .         .      E  L         .         .         .         R
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            1520.  C        .       . I       .       .       .      WE L        .       .       .       .
            1560.  C        .       .  I      .       .       .      WE L        .       .       .       .
            1600.  C        .       .  I      .       .       .      WE .L       .       .       .       .
            1640.  C        .       .  I      .       .       .      WE .L       .       .       .       .
            1680.  C        .       .  I      .       .       .      WE .L       .       .       .       .
            1720.  C        .       .  I      .       .       .      WE .L       .       .       .       .
    1788.00 1760.  C        .       .   I     .       .       .      WE .L       .       .       .       .
    1834.00 1800.  C        .       .      I  .       .       .      WE .        .       .       .       R
1
  11-28-89     11:01:55                                                                               PAGE   13




                                                                          THIS RUN EXECUTED 11-28-89

********************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST


PRELIMINARY RUN #1

SUMMARY PRINTOUT


     SECNO     XLBEL     RBEL     ELMIN     SSTA     ENDST       Q       DEPTH     CWSEL     AREA    TOPWID     VCH     EG


     50.000    84.30    84.30     59.30   926.80   1073.20   3600.00    24.10     83.40   2366.62   146.40     1.52   83.4

    296.000    84.45    84.45     59.45   927.07   1072.93   3600.00    23.96     83.41   2346.85   145.86     1.53   83.4

    321.000    84.46    84.46     59.46   927.10   1072.90   3600.00    23.95     83.41   2344.70   145.80     1.54   83.4

    326.000    83.46    83.46     64.56   937.35   1062.65   3600.00    18.82     83.38   1649.83   125.29     2.18   83.4

    350.900    83.48    83.48     64.58   937.39   1062.61   3600.00    18.81     83.39   1647.47   125.22     2.19   83.4

    351.000    83.48    83.48     64.58   937.39   1062.61   3600.00    18.81     83.39   1647.77   125.23     2.18   83.4

    485.000    83.56    83.56     64.66   922.45   1077.55   3600.00    18.77     83.43   2100.33   155.10     1.71   83.4

    750.000    83.72    83.72     64.82   922.72   1077.28   3600.00    18.63     83.45   2066.01   154.56     1.74   83.5

    850.000    83.78 100000.00    64.88   937.88   1062.12   3600.00    18.56     83.44   1616.70   124.23     2.23   83.5

    850.100    83.78 100000.00    64.88   937.90   1062.10   3600.00    18.56     83.44   1585.41   124.20     2.27   83.5

    978.530    84.04 100000.00    65.14   954.13   1045.87   3600.00    18.26     83.40   1152.74    91.74     3.12   83.5

    978.620    84.04 100000.00    65.14   954.13   1045.87   3600.00    18.26     83.40   1152.76    91.74     3.12   83.5

   1027.300    84.14 100000.00    65.24   954.28   1045.72   3600.00    18.16     83.40   1143.75    91.44     3.15   83.5

   1042.000    84.17 100000.00    65.27   967.96   1032.04   3600.00    18.09     83.36    898.22    64.09     4.01   83.6

   1042.100    85.43 100000.00    65.27   971.50   1028.50   3600.00    18.08     83.35    883.28    56.99     4.08   83.6
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      1079.900     84.20     84.20     65.35    967.97   1032.03   3600.00     18.03     83.38    894.94     64.07      4.02     83.63

1
  11-28-89     11:01:55                                                                                                  PAGE  14


        SECNO     XLBEL      RBEL     ELMIN      SSTA     ENDST         Q     DEPTH     CWSEL      AREA    TOPWID       VCH        EG


      1110.000     84.31     84.31     65.41    954.42   1045.30   3600.00     18.08     83.49   1133.18     90.88      3.18     83.64

      1262.900     84.62     84.62     65.72    954.88   1044.84   3600.00     17.77     83.49   1105.90     89.96      3.26     83.65

      1338.100     84.77     84.77     65.87    955.12   1044.60   3600.00     17.62     83.49   1092.21     89.49      3.30     83.66

      1363.000     84.82 100000.00     65.92    969.50   1030.50   3600.00     17.53     83.45    879.74     60.99      4.09     83.71

      1383.000     84.86 100000.00     65.96    969.50   1030.50   3600.00     17.52     83.48    908.02     60.99      3.96     83.72

      1400.000     84.87 100000.00     65.99    970.00   1019.80   3600.00     17.43     83.42    744.81     49.80      4.83     83.78

      1481.000     85.05     85.05     66.15    956.35   1043.65   3600.00     17.47     83.62   1046.44     87.29      3.44     83.80

      1788.000     85.66     85.66     66.76    957.27   1042.73   3600.00     16.87     83.63    995.11     85.46      3.62     83.83

      1834.000     84.00 100000.00     69.12    966.00   1034.00   3600.00     14.46     83.58    801.33     68.00      4.49     83.89

1
  11-28-89     11:01:55                                                                                                  PAGE  15



  SUMMARY OF ERRORS AND SPECIAL NOTES


1
  11-28-89     11:02:28                                                                                                  PAGE   1



                                                                                       THIS RUN EXECUTED 11-28-89
 ****************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
   IBM-PC-XT VERSION AUGUST 1985
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1*****************************************************                                         ************************************
*
 *  WATER SURFACE PROFILES                          *                                          *  U.S. ARMY CORPS OF ENGINEERS
*
 *  VERSION OF NOVEMBER 1976                        *                                          *  THE HYDROLOGIC ENGINEERING CENTER
*
 *  UPDATED MAY 1984                                *                                          *  609 SECOND STREET, SUITE D
*
 *  IBM-PC-XT VERSION AUGUST 1985                   *                                          *  DAVIS, CALIFORNIA 95616
*
 *  RUN DATE  12-05-89   TIME  10:19:24               *                                          *  (916) 440-2105 (FTS) 448-2105
  *
 *****************************************************                                         ************************************
*




                                                X     X  XXXXXXX   XXXXX              XXXXX
                                                X     X  X        X     X            X     X
                                                X     X  X        X                        X
                                                XXXXXXX  XXXX     X           XXXXX   XXXXX
                                                X     X  X        X                  X
                                                X     X  X        X     X            X
                                                X     X  XXXXXXX   XXXXX             XXXXXXX
1
  12-05-89     10:19:25                                                                                      PAGE    1



                                                                                    THIS RUN EXECUTED 12-05-89
 ************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
   IBM-PC-XT VERSION AUGUST 1985
 ************************************************


C
T1      LOWER SILVER CREEK, REACH 1 & 2
T2      100-YEAR EVENT (DESIGN FOR CAPACITY OF CREEK)
T3      PRELIMINARY RUN #1

J1  ICHECK     INQ       NINV      IDIR      STRT      METRIC     HVINS      Q         WSEL       FQ

        0.        2.        0.        0.   .000000       .00        .0        0.    80.200      .000

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH      FN        ALLDC      IBW       CHNIM      ITRACE

     -1.000      .000     5.000      .000    40.000      .000      .000      .000      .000      .000

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

     38.000    23.000    24.000    42.000    53.000    54.000    43.000     8.000     1.000    25.000


      4.000    26.000     3.000      .000      .000      .000      .000      .000      .000      .000
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```
NC      .035      .035      .046      .100      .300      .000      .000      .000      .000      .000
QT     1.000  6100.000      .000      .000      .000      .000      .000      .000      .000      .000
       CROSS SECTIONS LOOKING UPSTREAM
       AT CONFLUENCE WITH COYOTE CREEK
X1    50.000     7.000   925.000  1075.000      .000      .000      .000      .000      .000      .000
X3    10.000      .000      .000   910.000      .000  1090.000      .000    84.300    84.300      .000
GR    84.300   910.000    84.300   925.000    59.300   975.000    59.300  1000.000    59.300  1025.000
GR    84.300  1075.000    84.300  1090.000      .000      .000      .000      .000      .000      .000

NC      .030      .030      .030      .100      .300      .000      .000      .000      .000      .000
X1   296.000     7.000   925.000  1075.000   246.000   246.000   246.000      .000      .000      .000
X3    10.000      .000      .000   910.000      .000  1090.000      .000    84.450    84.450      .000
GR    84.450   910.000    84.450   925.000    59.450   975.000    59.450  1000.000    59.450  1025.000
GR    84.450  1075.000    84.450  1090.000      .000      .000      .000      .000      .000      .000

X1   321.000     7.000   925.000  1075.000    25.000    25.000    25.000      .000      .000      .000
X3    10.000      .000      .000   910.000      .000  1090.000      .000    84.460    84.460      .000
GR    84.460   910.000    84.460   925.000    59.460   975.000    59.460  1000.000    59.460  1025.000
GR    84.460  1075.000    84.460  1090.000      .000      .000      .000      .000      .000      .000
1
 12-05-89    10:19:25                                                                      PAGE   2



       5.1' GROUTED ROCK DROP STRUCTURE
X1   326.000     7.000   937.200  1062.800    11.200    11.200     5.000      .000      .000      .000
X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.460    83.460      .000
GR    83.460   915.000    83.460   937.200    64.560   975.000    64.560  1000.000    64.560  1025.000
GR    83.460  1062.800    83.460  1085.000      .000      .000      .000      .000      .000      .000

NC      .035      .035      .046      .100      .300      .000      .000      .000      .000      .000
X1   350.900     9.000   937.200  1062.800    24.900    24.900    24.900      .000      .000      .000
X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.480    83.480      .000
GR    83.480   915.000    83.480   922.200    83.480   937.200    64.580   975.000    64.580  1000.000
GR    64.580  1025.000    83.480  1062.800    84.580  1077.800    83.480  1085.000      .000      .000

X1   351.000     9.000   922.200  1077.800    15.100    15.100      .100      .000      .000      .000
X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.480    83.480      .000
GR    83.480   915.000    83.480   922.200    83.480   937.200    64.580   975.000    64.580  1000.000
GR    64.580  1025.000    83.480  1062.800    83.480  1077.800    83.480  1085.000      .000      .000

X1   485.000    11.000   922.200  1077.800   134.000   134.000   134.000      .000      .000      .000
X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.560    83.560      .000
GR    83.560   915.000    83.560   922.200    68.460   952.000    68.460   967.000    64.660   975.000
GR    64.660  1000.000    64.660  1025.000    68.460  1033.000    68.460  1048.000    83.560  1077.800
GR    83.560  1085.000      .000      .000      .000      .000      .000      .000      .000      .000

NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
X1   750.000    11.000   922.200  1077.800   244.620   285.380   265.000      .000      .000      .000
X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.720    83.720      .000
GR    83.720   915.000    83.720   922.200    68.820   952.000    68.820   967.000    64.820   975.000
GR    64.820  1000.000    64.820  1025.000    68.820  1033.000    68.820  1048.000    83.720  1077.800
GR    83.720  1085.000      .000      .000      .000      .000      .000      .000      .000      .000

       BEGIN CONCRETE LINING
X1   850.000     7.000   922.200  1077.800    92.310   107.690   100.000      .000      .000      .000
X3    10.000      .000      .000   922.200      .000  1077.800      .000    83.780    83.780      .000
GR    83.780   922.200    83.780   937.200    64.880   975.000    64.880  1000.000    64.880  1025.000
GR    83.780  1062.800    83.780  1077.800      .000      .000      .000      .000      .000      .000

NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
X1   850.100     7.000   922.200  1077.800    15.100    15.100      .100      .000      .000      .000
X3    10.000      .000      .000   922.200      .000  1077.800      .000    83.780    83.780      .000
GR    83.780   922.200    83.780   937.200    65.380   975.000    64.880  1000.000    65.380  1025.000
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 X1   978.530     7.000   938.150  1061.850   129.000   129.000   128.430      .000      .000      .000
 X3    10.000      .000      .000   938.150      .000  1061.850      .000    84.040    84.040      .000
 GR    84.040   938.150    84.040   953.150    65.640   981.500    65.140  1000.000    65.640  1018.500
 GR    84.040  1046.850    84.040  1061.850      .000      .000      .000      .000      .000      .000

 X1   978.620     5.000   953.150  1046.850    15.100    15.100      .090      .000      .000      .000
 X3    10.000      .000      .000   953.150      .000  1046.850      .000    84.040    84.040      .000
 GR    84.040   953.150    65.640   981.500    65.140  1000.000    65.640  1018.500    84.040  1046.850
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 X1  1027.300     5.000   953.150  1046.850    38.280    59.070    48.680      .000      .000      .000
 X3    10.000      .000      .000   953.150      .000  1046.850      .000    84.140    84.140      .000
 GR    84.140   953.150    65.740   981.500    65.240  1000.000    65.740  1018.500    84.140  1046.850

 X1  1042.000     5.000   967.330  1032.670    14.700    14.700    14.700      .000      .000      .000
 X3    10.000      .000      .000   967.330      .000  1032.670      .000    84.170    84.170      .000
 GR    84.170   967.330    65.770   981.500    65.270  1000.000    65.770  1018.500    84.170  1032.670

          WOOSTER AVENUE BRIDGE
 X1  1042.100     7.000   971.500  1028.500     3.510     3.370      .100      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    85.430    85.250      .000
 GR    85.430   971.500    78.600   971.510    65.770   981.500    65.270  1000.000    65.770  1018.500
 GR    78.600  1028.490    85.250  1028.500      .000      .000      .000      .000      .000      .000

 SB     1.050     1.560     2.700    57.000    37.000     2.670   994.290      .750      .000      .000
 X1  1079.800     7.000   971.500  1028.500    37.700    37.700    37.700      .000      .000      .000
 X2      .000      .000     1.000    85.480    86.920      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    85.450    85.300      .000
 GR    85.440   971.500    78.680   971.510    65.850   981.500    65.350  1000.000    65.850  1018.500
 GR    78.680  1028.490    85.290  1028.500      .000      .000      .000      .000      .000      .000

 X1  1079.900     7.000   967.330  1032.670     3.430     3.320      .100      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1070.000      .000    84.200    84.200      .000
 GR    84.200   937.000    84.200   967.330    65.850   981.500    65.350  1000.000    65.850  1018.500
 GR    84.200  1032.670    84.200  1070.000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  1110.000     7.000   953.150  1046.550    34.900    34.900    30.100      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1070.000      .000    84.310    84.310      .000
 GR    84.310   937.000    84.310   953.150    65.910   981.500    65.410  1000.000    65.910  1018.500
 GR    84.310  1046.550    84.310  1070.000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  1262.900      .000      .000      .000   152.870   152.870   152.870      .000      .310      .000

 X1  1338.100      .000      .000      .000    75.200    75.200    75.200      .000      .150      .000

          WESTERN PACIFIC RAILROAD BRIDGE
 X1  1363.000     7.000   969.500  1030.500    39.000    21.000    24.900      .000      .000      .000
 X3    10.000      .000      .000   969.500      .000  1030.500      .000    84.820    84.820      .000
 GR    84.820   969.500    80.420   969.510    66.420   981.500    65.920  1000.000    66.420  1018.500
 GR    80.420  1030.490    84.820  1030.500      .000      .000      .000      .000      .000      .000

 SB     1.050     1.560     2.700    73.000    45.000     5.330  1212.840     1.000      .000      .000
 X1  1383.000     7.000   969.500  1030.500    20.000    20.000    20.000      .000      .000      .000
 X2      .000      .000     1.000    85.410    88.660      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   969.500      .000  1030.500      .000    84.860    84.860      .000
 GR    84.860   969.500    80.460   969.510    66.460   981.500    65.960  1000.000    66.460  1022.500
 GR    80.460  1030.490    84.860  1030.500      .000      .000      .000      .000      .000      .000
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 X1  1400.000     6.000   970.000  1020.000     3.000    23.000    17.000      .000      .000      .000
 X3    10.000      .000      .000   970.000      .000  1020.000      .000    84.870    84.890      .000
 GR    84.870   970.000    80.470   970.010    66.490   982.500    65.990  1000.000    66.490  1017.500
 GR    84.890  1020.000      .000      .000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  1481.000     7.000   954.150  1045.850    87.000    80.000    81.000      .000      .000      .000
 X3    10.000      .000      .000   923.500      .000  1047.500      .000    85.050    85.050      .000
 GR    85.050   923.500    85.050   954.150    66.650   982.500    66.150  1000.000    66.650  1017.500
 GR    85.050  1045.850    85.050  1047.500      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  1788.000      .000      .000      .000   307.000   307.000   307.000      .000      .610      .000

 X1  1834.000     7.000   966.000  1034.000    56.000    36.000    46.000      .000      .000      .000
 X3    10.000      .000      .000   966.000      .000  1034.000      .000    84.000    84.000      .000
 GR    84.000   966.000    80.120   966.010    69.120   982.500    69.120  1000.000    69.120  1017.500
 GR    80.120  1033.990    84.000  1034.000      .000      .000      .000      .000      .000      .000

       U.S. HIGHWAY 101 BRIDGE
 X1  1869.500     7.000   971.500  1028.500    31.500    42.000    35.500      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    84.420    84.420      .000
 GR    84.420   971.500    78.920   971.510    69.220   979.000    69.220  1000.000    69.220  1021.000
 GR    78.920  1028.490    84.420  1028.500      .000      .000      .000      .000      .000      .000

 SB      .900     1.560     2.700    57.000    42.000     2.330   890.000      .750      .000      .000
 X1  2027.000     7.000   971.500  1028.500   157.500   157.500   157.500      .000      .000      .000
 X2      .000      .000     1.000    87.000    88.200      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    87.560    87.560      .000
 GR    87.560   971.500    79.360   971.510    69.660   979.000    69.660  1000.000    69.660  1021.000
 GR    79.660  1028.490    87.560  1028.500      .000      .000      .000      .000      .000      .000

 X1  2057.000     7.000   966.000  1034.000    31.000    31.000    30.000      .000      .000      .000
 X3    10.000      .000      .000   966.000      .000  1034.000      .000    85.250    85.250      .000
 GR    85.250   966.000    80.750   966.000    69.750   982.500    69.750  1000.000    69.750  1017.500
 GR    80.750  1033.990    85.750  1034.000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  2119.000     5.000   957.750  1042.250    65.000    63.000    62.000      .000      .000      .000
 X3    10.000      .000      .000   957.750      .000  1042.250      .000    86.310    86.310      .000
 GR    86.310   957.750    70.310   982.500    69.810  1000.000    70.310  1017.500    86.310  1042.250

 X1  2499.000      .000      .000      .000   380.000   380.000   380.000      .000      .380      .000

 NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
       END CONCRETE LINING, BEGIN EARTH CHANNEL
 X1  2621.400     5.000   937.000  1063.000   128.000   119.000   122.400      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1063.000      .000    86.810    86.810      .000
 GR    86.810   937.000    70.310   970.000    70.310  1000.000    70.310  1030.000    86.810  1063.000
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 X1  2646.400     5.000   937.000  1063.000    22.000    28.000    25.000      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1063.000      .000    86.820    86.820      .000
 GR    86.820   937.000    70.320   970.000    70.320  1000.000    70.320  1030.000    86.820  1063.000

 NC      .030      .030      .040      .100      .300      .000      .000      .000      .000      .000
 X1  2646.500     6.000   922.000  1063.000    15.100      .100      .100      .000      .000      .000
 X3    10.000      .000      .000   922.000      .000  1063.000      .000    86.820    86.820      .000
 GR    86.820   922.000    86.820   937.000    70.320   970.000    70.320  1000.000    70.320  1030.000
 GR    86.820  1063.000      .000      .000      .000      .000      .000      .000      .000      .000
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X3    10.000      .000      .000   922.000      .000  1063.000      .000    86.890    86.890      .000
GR    86.890   922.000    74.390   947.000    74.390   962.000    70.390   970.000    70.390  1000.000
GR    70.390  1030.000    86.890  1063.000      .000      .000      .000      .000      .000      .000

       OPPOSITE NORTH 33RD STREET & MELODY LANE
X1  2917.100      .000      .000      .000   123.750   160.580   142.100      .000      .070      .000

X1  3000.000      .000      .000      .000    82.900    82.900    82.900      .000      .040      .000

X1  3000.100     8.000   922.000  1078.000      .100    15.000      .100      .000      .000      .000
X3    10.000      .000      .000   922.000      .000  1078.000      .000    86.990    86.990      .000
GR    86.990   922.000    74.490   947.000    74.490   962.000    70.490   970.000    70.490  1000.000
GR    70.490  1030.000    86.990  1063.000    86.990  1078.000      .000      .000      .000      .000

X1  3048.400    11.000   922.000  1074.000    48.300    48.300    48.300      .000      .000      .000
X3    10.000      .000      .000   922.000      .000  1074.000      .000    87.020    87.020      .000
GR    87.020   922.000    74.520   947.000    74.520   962.000    70.520   970.000    70.520  1000.000
GR    70.520  1030.000    76.770  1042.500    76.770  1057.500    84.520  1073.000    84.520  1073.990
GR    87.020  1074.000      .000      .000      .000      .000      .000      .000      .000      .000

X1  3100.000    11.000   922.000  1074.000    55.900    47.300    51.600      .000      .000      .000
X3    10.000      .000      .000   922.000      .000  1074.000      .000    87.050    87.050      .000
GR    87.050   922.000    74.550   947.000    74.550   962.000    70.550   970.000    70.550  1000.000
GR    70.550  1030.000    74.550  1038.000    74.550  1053.000    84.550  1073.000    84.550  1073.990
GR    87.050  1074.000      .000      .000      .000      .000      .000      .000      .000      .000

X1  3300.000      .000      .000      .000   216.670   183.330   200.000      .000      .100      .000

X1  3300.100    13.000   926.000  1074.000     4.000      .100      .100      .000      .000      .000
X3    10.000      .000      .000   926.000      .000  1074.000      .000    87.150    87.150      .000
GR    87.150   926.000    84.650   926.010    84.650   927.000    74.650   947.000    74.650   962.000
GR    70.650   970.000    70.650  1000.000    70.650  1030.000    74.650  1038.000    74.650  1053.000
GR    84.650  1073.000    84.650  1073.990    87.150  1074.000      .000      .000      .000      .000

X1  3330.500      .000      .000      .000    32.890    27.830    30.360      .000      .020      .000

X1  3662.900      .000      .000      .000   332.400   332.400   332.400      .000      .170      .000
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X1  3762.900     9.000   926.000  1074.000   100.000   100.000   100.000      .000      .000      .000
X3    10.000      .000      .000   926.000      .000  1074.000      .000    87.380    87.380      .000
GR    87.380   926.000    84.880   926.010    84.880   942.000    70.880   970.000    70.880  1000.000
GR    70.880  1030.000    84.880  1058.000    84.880  1073.990    87.380  1074.000      .000      .000

NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
X1  3763.000     9.000   926.000  1074.000      .100      .100      .100      .000      .000      .000
X3    10.000      .000      .000   926.000      .000  1074.000      .000    87.380    87.380      .000
GR    87.380   926.000    84.880   926.010    84.880   942.000    70.880   970.000    70.880  1000.000
GR    70.880  1030.000    84.880  1058.000    84.880  1073.990    87.380  1074.000      .000      .000

X1  3788.000      .000      .000      .000    25.000    25.000    25.000      .000      .010      .000

NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
X1  3788.100     7.000   942.000  1058.000    16.100    16.100      .100      .000      .000      .000
X3    10.000      .000      .000   942.000      .000  1058.000      .000    87.390    87.390      .000
GR    87.390   942.000    84.890   942.010    71.390   970.000    70.890  1000.000    71.390  1030.000
GR    84.890  1057.990    87.390  1058.000      .000      .000      .000      .000      .000      .000

       BEGIN CONCRETE U-FRAME CHANNEL
X1  3838.000     5.000   977.000  1023.000    61.030    61.030    49.900      .000      .000      .000
X3    10.000      .000      .000   977.000      .000  1023.000      .000    87.440    87.440      .000
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 QT     1.000  5200.000      .000      .000      .000      .000      .000      .000      .000      .000
          CONFLUENCE WITH MIGUELITA CREEK (78" CMP)
 X1  4115.000      .000      .000      .000   295.460   258.540   277.000      .000      .280      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  4338.500      .000      .000      .000   238.390   208.610   223.500      .000      .220      .000

 X1  5109.800      .000      .000      .000   771.300   771.300   771.300      .000      .770      .000

 X1  5178.000     5.000   975.000  1025.000    69.000    70.000    68.200      .000      .000      .000
 X3    10.000      .000      .000   975.000      .000  1025.000      .000    89.000    89.000      .000
 GR    89.000   975.000    73.610   975.010    73.110  1000.000    73.610  1024.990    89.000  1025.000

          KING ROAD & MCKEE ROAD BOX CULVERT
 X1  5236.000     5.000   975.330  1022.000    50.000    88.000    58.000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    89.000    89.000      .000
 GR    89.000   975.330    73.700   975.340    73.210  1000.000    73.630  1021.990    89.000  1022.000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  5236.100     5.000   975.330  1022.000      .100      .100      .100      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.700    85.700      .000
 GR    85.700   975.330    73.700   975.340    73.210  1000.000    73.630  1021.990    85.700  1022.000

 SB      .001      .001      .010    46.670    46.670     1.670   572.240      .000      .000      .000
 X1  5272.000     5.000   975.330  1022.000    35.950    35.950    35.900      .000      .000      .000
 X2      .000      .000     1.000    85.770    87.200      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.770    85.770      .000
 GR    85.770   975.330    73.770   975.340    73.280  1000.000    73.700  1021.990    85.770  1022.000
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 SB      .001      .001      .010    46.670    46.670     2.670   473.680      .000      .000      .000
 X1  5278.000     6.000   975.330  1022.000     6.000     6.000     6.000      .000      .000      .000
 X2      .000      .000     1.000    85.850    87.500      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.850    82.900      .000
 GR    85.850   975.330    73.850   975.340    73.290  1000.000    74.900  1000.010    75.300  1021.990
 GR    82.900  1022.000      .000      .000      .000      .000      .000      .000      .000      .000

 SB      .900     1.300     2.700    46.670    46.670     2.670   473.680      .000      .000      .000
 X1  5387.000     6.000   975.330  1022.000   109.000   109.000   109.000      .000      .000      .000
 X2      .000      .000     1.000    85.970    87.500      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.970    83.690      .000
 GR    85.970   975.330    73.970   975.340    73.480  1000.000    75.690  1000.010    76.110  1021.990
 GR    83.690  1022.000      .000      .000      .000      .000      .000      .000      .000      .000

 SB      .001      .001      .010    46.670    46.670     1.670   523.620      .000      .000      .000
 X1  5393.000     6.000   975.330  1022.000     6.000     6.000     6.000      .000      .000      .000
 X2      .000      .000     1.000    85.980    87.600      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.980    85.980      .000
 GR    85.980   975.330    73.980   975.340    73.490  1000.000    75.700  1000.010    76.120  1021.990
 GR    85.980  1022.000      .000      .000      .000      .000      .000      .000      .000      .000

 SB      .001      .001      .010    46.670    46.670     1.670   523.620      .000      .000      .000
 X1  5417.700     6.000   975.330  1022.000    24.700    24.700    24.700      .000      .000      .000
 X2      .000      .000     1.000    86.030    87.700      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    86.030    86.030      .000
 GR    86.030   975.330    74.030   975.340    73.540  1000.000    75.750  1000.010    76.170  1021.990
 GR    86.030  1022.000      .000      .000      .000      .000      .000      .000      .000      .000
 EJ      .000      .000      .000      .000      .000      .000      .000      .000      .000      .000
1
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     Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *PROF 1

 CCHV=    .100 CEHV=    .300
 *SECNO 50.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.30 ELREA=       84.30

         CROSS SECTIONS LOOKING UPSTREAM
         AT CONFLUENCE WITH COYOTE CREEK
     50.00     20.90     80.20       .00     80.20     80.36       .16       .00       .00     84.30
     6100.        0.     6100.        0.        0.     1919.        0.        0.        0.     84.30
       .00       .00      3.18       .00      .035      .046      .035      .000     59.30    933.20
   .000305        0.        0.        0.         0         0         0       .00    133.60   1066.80
0
 CCHV=    .100 CEHV=    .300
 *SECNO 296.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.45 ELREA=       84.45

    296.00     20.80     80.25       .00       .00     80.40       .16       .05       .00     84.45
     6100.        0.     6100.        0.        0.     1905.        0.       11.        1.     84.45
       .02       .00      3.20       .00      .030      .030      .030      .000     59.45    933.41
   .000132      246.      246.      246.         2         0         0       .00    133.18   1066.59
0
 *SECNO 321.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.46 ELREA=       84.46

    321.00     20.79     80.25       .00       .00     80.41       .16       .00       .00     84.46
     6100.        0.     6100.        0.        0.     1904.        0.       12.        1.     84.46
       .02       .00      3.20       .00      .030      .030      .030      .000     59.46    933.42
   .000132       25.       25.       25.         0         0         0       .00    133.16   1066.58
0
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     SECNO      DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     Q          QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME       VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
     SLOPE      XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 326.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.46 ELREA=       83.46

         5.1' GROUTED ROCK DROP STRUCTURE
    326.00     15.55     80.11       .00       .00     80.47       .36       .00       .06     83.46
     6100.        0.     6100.        0.        0.     1261.        0.       12.        1.     83.46
       .02       .00      4.84       .00      .030      .030      .030      .000     64.56    943.91
 CCHV=    .100 CEHV=    .300
 *SECNO 350.900

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.48 ELREA=       83.48

    350.90    15.54    80.12      .00      .00    80.49      .36      .02      .00    83.48
     6100.       0.    6100.       0.       0.    1259.       0.      13.       1.    83.48
       .03      .00     4.84      .00     .035     .046     .035     .000    64.58   943.93
   .000973      25.      25.      25.        0        0        0      .00   112.14  1056.07
0
 *SECNO 351.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.48 ELREA=       83.48

    351.00    15.54    80.12      .00      .00    80.49      .36      .00      .00    83.48
     6100.       0.    6100.       0.       0.    1261.       0.      13.       1.    83.48
       .03      .00     4.84      .00     .035     .046     .035     .000    64.58   943.90
   .000969      15.       0.      15.        0        0        0      .00   112.19  1056.10
0
 *SECNO 485.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000
1
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    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.56 ELREA=       83.56

    485.00    15.72    80.38      .00      .00    80.60      .21      .10      .02    83.56
     6100.       0.    6100.       0.       0.    1646.       0.      17.       1.    83.56
       .04      .00     3.71      .00     .035     .046     .035     .000    64.66   928.47
   .000542     134.     134.     134.        2        0        0      .00   143.06  1071.53
0
 CCHV=    .100 CEHV=    .300
 *SECNO 750.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.72 ELREA=       83.72

    750.00    15.67    80.49      .00      .00    80.71      .22      .11      .00    83.72
     6100.       0.    6100.       0.       0.    1625.       0.      27.       2.    83.72
       .05      .00     3.75      .00     .035     .035     .035     .000    64.82   928.66
   .000327     245.     265.     285.        2        0        0      .00   142.68  1071.34
0
 *SECNO 850.000

 3470 ENCROACHMENT STATIONS=     922.2    1077.8  TYPE=     1  TARGET=     155.600

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.78 ELREA=       83.78

        BEGIN CONCRETE LINING
    850.00    15.55    80.43      .00      .00    80.79      .36      .04      .04    83.78
   .000561     92.     100.     108.        2         0         0      .00   112.20  1056.10
0
 CCHV=    .300 CEHV=    .500
 *SECNO 850.100

 3470 ENCROACHMENT STATIONS=     922.2    1077.8  TYPE=     1  TARGET=     155.600

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.78 ELREA=       83.78

    850.10    15.54    80.42      .00      .00    80.80      .38      .00      .01    83.78
     6100.       0.    6100.       0.       0.    1230.       0.      31.       2. 100000.00
       .06      .00     4.96      .00     .015     .015     .015     .000    64.88   944.09
   .000111      15.       0.      15.        1        0        0      .00   111.83  1055.91
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 978.530

 3470 ENCROACHMENT STATIONS=     938.2    1061.8  TYPE=     1  TARGET=     123.700

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.04 ELREA=       84.04

    978.53    15.12    80.26      .00      .00    81.01      .75      .02      .18    84.04
     6100.       0.    6100.       0.       0.     879.       0.      34.       3. 100000.00
       .07      .00     6.94      .00     .015     .015     .015     .000    65.14   958.98
   .000237     129.     128.     129.        2        0        0      .00    82.05  1041.02
0
 *SECNO 978.620

 3470 ENCROACHMENT STATIONS=     953.2    1046.8  TYPE=     1  TARGET=      93.700

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.04 ELREA=       84.04

    978.62    15.12    80.26      .00      .00    81.01      .75      .00      .00    84.04
     6100.       0.    6100.       0.       0.     879.       0.      34.       3. 100000.00
       .07      .00     6.94      .00     .015     .015     .015     .000    65.14   958.97
   .000237      15.       0.      15.        0        0        0      .00    82.05  1041.02
0
 *SECNO 1027.300

 3470 ENCROACHMENT STATIONS=     953.2    1046.8  TYPE=     1  TARGET=      93.700

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.14 ELREA=       84.14

   1027.30    15.02    80.26      .00      .00    81.02      .76      .01      .01    84.14
     6100.       0.    6100.       0.       0.     872.       0.      35.       3. 100000.00
       .07      .00     6.99      .00     .015     .015     .015     .000    65.24   959.11
   .000243      38.      49.      59.        0        0        0      .00    81.77  1040.89
0
 *SECNO 1042.000

 3470 ENCROACHMENT STATIONS=     967.3    1032.7  TYPE=     1  TARGET=      65.340

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.17 ELREA=       84.17

   1042.00    14.78    80.05      .00      .00    81.75     1.70      .00      .22    84.17
   .000390      15.      15.      15.        2        0        0      .00    58.99  1029.50
 0
 1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 1042.100

 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.43 ELREA=       85.25

          WOOSTER AVENUE BRIDGE
   1042.10    14.78    80.05      .00      .00    81.25     1.20      .00      .00    85.43
     6100.       0.    6100.       0.       0.     695.       0.      35.       3. 100000.00
       .07      .00     8.78      .00     .015     .015     .015     .000    65.27   971.51
   .000385       4.       0.       3.        0        0        0      .00    56.98  1028.49
 0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.05      1.56      2.70     57.00     37.00      2.67    994.29       .75     65.27     65.27

 *SECNO 1079.800
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     79.88 BRIDGE VELOCITY=,      9.22      CALCULATED CHANNEL AREA=,      661.

  EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD
                                                                 AREA
       .00     81.40      .18        0.     6100.      994.     1000.      85.48     86.92



 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.45 ELREA=       85.30

   1079.80    14.88    80.23      .00      .00    81.40     1.18      .16      .00    85.44
     6100.       0.    6100.       0.       0.     700.       0.      35.       3. 100000.00
       .07      .00     8.71      .00     .000     .015     .000     .000    65.35   971.51
   .000377      38.      38.      38.        0        0        0      .00    56.98  1028.49
 0
 *SECNO 1079.900

 3470 ENCROACHMENT STATIONS=     937.0    1070.0  TYPE=     1  TARGET=     133.000
 1
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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST
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     1079.90    14.88    80.23      .00      .00    81.41     1.18      .00      .00    84.20
       6100.       0.    6100.       0.       0.     701.       0.      35.       3.    84.20
         .07      .00     8.70      .00     .015     .015     .015     .000    65.35   970.40
     .000381       3.       0.       3.        0        0        0      .00    59.20  1029.60
0
 CCHV=     .100 CEHV=     .300
 *SECNO 1110.000

 3470 ENCROACHMENT STATIONS=     937.0    1070.0  TYPE=     1  TARGET=     133.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.31 ELREA=       84.31

     1110.00    15.33    80.74      .00      .00    81.46      .72      .01      .05    84.31
       6100.       0.    6100.       0.       0.     895.       0.      36.       3.    84.31
         .07      .00     6.81      .00     .015     .015     .015     .000    65.41   958.65
     .000225      35.      30.      35.        2        0        0      .00    82.46  1041.11
0
 CCHV=     .300 CEHV=     .500
 *SECNO 1262.900
     1262.90    15.03    80.75      .00      .00    81.52      .76      .04      .02    84.62
       6100.       0.    6100.       0.       0.     871.       0.      39.       3.    84.62
         .08      .00     7.01      .00     .015     .015     .015     .000    65.72   959.11
     .000243     153.     153.     153.        2        0        0      .00    81.55  1040.66
0
 *SECNO 1338.100
     1338.10    14.89    80.76      .00      .00    81.54      .78      .02      .01    84.77
       6100.       0.    6100.       0.       0.     860.       0.      41.       3.    84.77
         .08      .00     7.09      .00     .015     .015     .015     .000    65.87   959.31
     .000252      75.      75.      75.        0        0        0      .00    81.14  1040.45
0
 *SECNO 1363.000

 3470 ENCROACHMENT STATIONS=     969.5    1030.5  TYPE=     1  TARGET=      61.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.82 ELREA=       84.82

1
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         WESTERN PACIFIC RAILROAD BRIDGE
     1363.00    14.66    80.58      .00      .00    81.74     1.16      .01      .19    84.82
       6100.       0.    6100.       0.       0.     705.       0.      41.       3. 100000.00
         .08      .00     8.65      .00     .015     .015     .015     .000    65.92   969.51
     .000379      39.      25.      21.        2        0        0      .00    60.98  1030.49
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.05      1.56      2.70     73.00     45.00      5.33   1212.84      1.00     65.92     65.92

 *SECNO 1383.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=      80.39 BRIDGE VELOCITY=,       7.79      CALCULATED CHANNEL AREA=,       783.

  EGPRS      EGLWC       H3        QWEIR      QLOW       BAREA    TRAPEZOID      ELLC       ELTRD
                                                                   AREA
       .00     81.89       .27        0.     6100.     1213.     1153.       85.41      88.66
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.86 ELREA=       84.86

   1383.00    14.89    80.85      .00      .00    81.89     1.03      .14      .00    84.86
     6100.       0.    6100.       0.       0.     748.       0.      41.       3. 100000.00
       .08      .00     8.15      .00     .000     .015     .000     .000    65.96   969.51
   .000323      20.      20.      20.        0        0        0      .00    60.98  1030.49
0
 *SECNO 1400.000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     970.0    1020.0  TYPE=      1  TARGET=      50.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.87 ELREA=       84.89

   1400.00    14.60    80.59      .00      .00    82.17     1.58      .01      .27    84.87
     6100.       0.    6100.       0.       0.     604.       0.      42.       3. 100000.00
       .08      .00    10.09      .00     .015     .015     .015     .000    65.99   970.01
   .000565       3.      17.      23.        2        0        0      .00    49.40  1019.41
0
1
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     SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 CCHV=     .100 CEHV=      .300
 *SECNO 1481.000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     923.5    1047.5  TYPE=      1  TARGET=     124.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.05 ELREA=       85.05

   1481.00    15.36    81.51      .00      .00    82.28      .76      .03      .08    85.05
     6100.       0.    6100.       0.       0.     869.       0.      43.       4.    85.05
       .08      .00     7.02      .00     .015     .015     .015     .000    66.15   959.60
   .000242      87.      81.      80.        3        0        0      .00    80.80  1040.40
0
 CCHV=     .300 CEHV=      .500
 *SECNO 1788.000
   1788.00    14.79    81.55      .00      .00    82.40      .85      .08      .04    85.66
     6100.       0.    6100.       0.       0.     824.       0.      49.       4.    85.66
       .10      .00     7.41      .00     .015     .015     .015     .000    66.76   960.48
   .000281     307.     307.     307.        2        0        0      .00    79.03  1039.52
0
 *SECNO 1834.000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     966.0    1034.0  TYPE=      1  TARGET=      68.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.00 ELREA=       84.00

   1834.00    12.18    81.30      .00      .00    82.68     1.38      .02      .26    84.00
  .000531     56.     46.     36.       2       0       0     .00   67.99  1033.99
0
 *SECNO 1869.500

 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.42 ELREA=       84.42

        U.S. HIGHWAY 101 BRIDGE
   1869.50    12.02    81.24      .00      .00    82.78     1.54      .02      .08    84.42
     6100.       0.    6100.       0.       0.     612.       0.      50.       4. 100000.00
       .10      .00     9.96      .00     .015     .015     .015     .000    69.22   971.51
   .000573      32.      36.      42.        2        0        0      .00    56.99  1028.49
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
       .90       1.56       2.70      57.00      42.00       2.33     890.00        .75      69.22      69.22

 *SECNO 2027.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     81.01 BRIDGE VELOCITY=,     10.67      CALCULATED CHANNEL AREA=,      572.

  EGPRS      EGLWC       H3       QWEIR      QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                   AREA
       .00     83.06      .20        0.     6100.      890.      942.      87.00     88.20



 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.56 ELREA=       87.56

   2027.00    11.78    81.44      .00      .00    83.06     1.62      .28      .00    87.56
     6100.       0.    6100.       0.       0.     598.       0.      52.       4. 100000.00
       .10      .00    10.21      .00     .000     .015     .000     .000    69.66   971.51
   .000615     158.     158.     158.        0        0        0      .00    56.98  1028.49
0
 *SECNO 2057.000

 3470 ENCROACHMENT STATIONS=     966.0    1034.0  TYPE=     1  TARGET=      68.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.25 ELREA=       85.25

   2057.00    11.91    81.66      .00      .00    83.13     1.46      .02      .05    85.25
     6100.       0.    6100.       0.       0.     629.       0.      53.       5. 100000.00
       .10      .00     9.70      .00     .015     .015     .015     .000    69.75   966.00
   .000578      31.      30.      31.        2        0        0      .00    67.99  1033.99
0
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     SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN       SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID      ENDST


 CCHV=    .100 CEHV=     .300
 *SECNO 2119.000

 3470 ENCROACHMENT STATIONS=     957.8    1042.3  TYPE=     1  TARGET=      84.500

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.31 ELREA=       86.31

   2119.00    11.80    81.61      .00      .00    83.20     1.60      .04      .04    86.31
     6100.       0.    6100.       0.       0.     602.       0.      54.       5. 100000.00
       .11      .00    10.14      .00     .015     .015     .015     .000    69.81   965.02
   .000671      65.      62.      63.        2        0        0      .00    69.95  1034.98
0
 *SECNO 2499.000
   2499.00    11.64    81.83      .00      .00    83.48     1.65      .26      .02    86.69
     6100.       0.    6100.       0.       0.     591.       0.      59.       5.    86.69
       .12      .00    10.32      .00     .015     .015     .015     .000    70.19   965.25
   .000705     380.     380.     380.        1        0        0      .00    69.49  1034.75
0
 CCHV=    .100 CEHV=     .300
 *SECNO 2621.400

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     937.0    1063.0  TYPE=     1  TARGET=     126.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.81 ELREA=       86.81

         END CONCRETE LINING, BEGIN EARTH CHANNEL
   2621.40    12.92    83.23      .00      .00    83.70      .47      .09      .12    86.81
     6100.       0.    6100.       0.       0.    1108.       0.      61.       6. 100000.00
       .12      .00     5.50      .00     .035     .035     .035     .000    70.31   944.17
   .000845     128.     122.     119.        3        0        0      .00   111.66  1055.83
0
 *SECNO 2646.400

 3470 ENCROACHMENT STATIONS=     937.0    1063.0  TYPE=     1  TARGET=     126.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.82 ELREA=       86.82

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     SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN       SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID      ENDST


   2646.40    12.93    83.25      .00      .00    83.72      .47      .02      .00    86.82
     6100.       0.    6100.       0.       0.    1110.       0.      62.       6. 100000.00
       .12      .00     5.50      .00     .035     .035     .035     .000    70.32   944.15
   .000843      22.      25.      28.        0        0        0      .00   111.70  1055.85
0
 CCHV=    .100 CEHV=     .300
 *SECNO 2646.500
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.82 ELREA=       86.82

  2646.50    12.93    83.25      .00      .00    83.72      .47      .00      .00    86.82
   6100.       0.    6100.       0.       0.    1110.       0.      62.       6. 100000.00
     .12      .00     5.49      .00     .030     .040     .030     .000    70.32   944.14
  .001099      15.       0.       0.        0        0        0      .00   111.73  1055.86
0
 *SECNO 2775.000

 3470 ENCROACHMENT STATIONS=     922.0    1063.0  TYPE=     1  TARGET=     141.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.89 ELREA=       86.89

  2775.00    13.10    83.49      .00      .00    83.85      .36      .12      .01    86.89
   6100.       0.    6100.       0.       0.    1266.       0.      66.       6. 100000.00
     .13      .00     4.82      .00     .030     .040     .030     .000    70.39   928.80
  .000839     112.     129.     145.        2        0        0      .00   127.40  1056.20
0
 *SECNO 2917.100
          OPPOSITE NORTH 33RD STREET & MELODY LANE
  2917.10    13.15    83.61      .00      .00    83.97      .36      .12      .00    86.96
   6100.       0.    6100.       0.       0.    1273.       0.      70.       6.    86.96
     .14      .00     4.79      .00     .030     .040     .030     .000    70.46   928.68
  .000825     124.     142.     161.        1        0        0      .00   127.64  1056.32
0
 *SECNO 3000.000
  3000.00    13.18    83.68      .00      .00    84.04      .35      .07      .00    87.00
   6100.       0.    6100.       0.       0.    1276.       0.      72.       7.    87.00
     .14      .00     4.78      .00     .030     .040     .030     .000    70.50   928.64
  .000820      83.      83.      83.        0        0        0      .00   127.73  1056.36
0
1
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   SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
   Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
   TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
   SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 *SECNO 3000.100

 3470 ENCROACHMENT STATIONS=     922.0    1078.0  TYPE=     1  TARGET=     156.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.99 ELREA=       86.99

  3000.10    13.19    83.68      .00      .00    84.04      .35      .00      .00    86.99
   6100.       0.    6100.       0.       0.    1278.       0.      72.       7. 100000.00
     .14      .00     4.77      .00     .030     .040     .030     .000    70.49   928.61
  .000816       0.       0.      15.        0        0        0      .00   127.79  1056.39
0
 *SECNO 3048.400

 3470 ENCROACHMENT STATIONS=     922.0    1074.0  TYPE=     1  TARGET=     152.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.02 ELREA=       87.02

  3048.40    13.26    83.78      .00      .00    84.08      .30      .04      .01    87.02
   6100.       0.    6100.       0.       0.    1391.       0.      74.       7. 100000.00
     .15      .00     4.38      .00     .030     .040     .030     .000    70.52   928.48
  .000710      48.      48.      48.        2        0        0      .00   143.05  1071.52
0
 *SECNO 3100.000
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      87.05 ELREA=      87.05

   3100.00    13.28    83.83      .00      .00    84.12      .28      .04      .00    87.05
     6100.       0.    6100.       0.       0.    1427.       0.      75.       7. 100000.00
       .15      .00     4.27      .00     .030     .040     .030     .000    70.55   928.45
   .000652      56.      52.      47.        1        0        0      .00   143.11  1071.55
0
 *SECNO 3300.000
   3300.00    13.32    83.97      .00      .00    84.25      .28      .13      .00    87.15
     6100.       0.    6100.       0.       0.    1433.       0.      82.       8.    87.15
       .16      .00     4.26      .00     .030     .040     .030     .000    70.65   928.36
   .000644     217.     200.     183.        0        0        0      .00   143.28  1071.64
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN      SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


 *SECNO 3300.100

 3470 ENCROACHMENT STATIONS=     926.0    1074.0  TYPE=     1  TARGET=     148.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      87.15 ELREA=      87.15

   3300.10    13.31    83.96      .00      .00    84.25      .28      .00      .00    87.15
     6100.       0.    6100.       0.       0.    1433.       0.      82.       8. 100000.00
       .16      .00     4.26      .00     .030     .040     .030     .000    70.65   928.37
   .000645       4.       0.       0.        0        0        0      .00   143.26  1071.63
0
 *SECNO 3330.500
   3330.50    13.31    83.98      .00      .00    84.27      .28      .02      .00    87.17
     6100.       0.    6100.       0.       0.    1433.       0.      83.       8.    87.17
       .17      .00     4.26      .00     .030     .040     .030     .000    70.67   928.37
   .000645      33.      30.      28.        0        0        0      .00   143.26  1071.63
0
 *SECNO 3662.900
   3662.90    13.36    84.20      .00      .00    84.48      .28      .21      .00    87.34
     6100.       0.    6100.       0.       0.    1439.       0.      94.       9.    87.34
       .19      .00     4.24      .00     .030     .040     .030     .000    70.84   928.28
   .000637     332.     332.     332.        0        0        0      .00   143.44  1071.72
0
 *SECNO 3762.900

 3470 ENCROACHMENT STATIONS=     926.0    1074.0  TYPE=     1  TARGET=     148.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      87.38 ELREA=      87.38

   3762.90    13.29    84.17      .00      .00    84.61      .44      .08      .05    87.38
     6100.       0.    6100.       0.       0.    1150.       0.      97.       9. 100000.00
       .19      .00     5.30      .00     .030     .040     .030     .000    70.88   943.42
   .000994     100.     100.     100.        2        0        0      .00   113.15  1056.58
0
 CCHV=    .100 CEHV=    .300
 *SECNO 3763.000

 3470 ENCROACHMENT STATIONS=     926.0    1074.0  TYPE=     1  TARGET=     148.000
1
  12-05-89    10:19:25                                                                        PAGE   21
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.38 ELREA=       87.38

   3763.00    13.29     84.17       .00       .00     84.61       .44       .00       .00     87.38
     6100.       0.     6100.        0.        0.     1150.        0.       97.        9. 100000.00
       .19      .00      5.30       .00      .035      .035      .035      .000     70.88    943.42
   .000761       0.        0.        0.         0         0         0       .00    113.15   1056.58
0
 *SECNO 3788.000
   3788.00    13.30     84.19       .00       .00     84.62       .44       .02       .00     87.39
     6100.       0.     6100.        0.        0.     1152.        0.       97.        9.     87.39
       .19      .00      5.30       .00      .035      .035      .035      .000     70.89    943.40
   .000758      25.       25.       25.         0         0         0       .00    113.20   1056.60
0
 CCHV=     .300 CEHV=     .500
 *SECNO 3788.100

 3470 ENCROACHMENT STATIONS=     942.0    1058.0  TYPE=     1  TARGET=     116.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.39 ELREA=       87.39

   3788.10    13.29     84.18       .00       .00     84.64       .46       .00       .01     87.39
     6100.       0.     6100.        0.        0.     1121.        0.       97.        9. 100000.00
       .19      .00      5.44       .00      .015      .015      .015      .000     70.89    943.49
   .000151      16.        0.       16.         2         0         0       .00    113.02   1056.51
0
 *SECNO 3838.000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     977.0    1023.0  TYPE=     1  TARGET=      46.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.44 ELREA=       87.44

          BEGIN CONCRETE U-FRAME CHANNEL
   3838.00    12.58     83.52       .00       .00     85.32      1.79       .01       .67     87.44
     6100.       0.     6100.        0.        0.      567.        0.       98.        9. 100000.00
       .19      .00     10.75       .00      .015      .015      .015      .000     70.94    977.00
   .000726      61.       50.       61.         2         0         0       .00     45.99   1023.00
0
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 4115.000

 3301 HV CHANGED MORE THAN HVINS

          CONFLUENCE WITH MIGUELITA CREEK (78" CMP)
   4115.00    13.27     84.49       .00       .00     85.67      1.17       .16       .19     87.72
     5200.       0.     5200.        0.        0.      599.        0.      102.        9.     87.72
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0
 CCHV=    .100 CEHV=    .300
 *SECNO 4338.500
   4338.50    13.14    84.58      .00      .00    85.77     1.19      .10      .01    87.94
     5200.       0.    5200.       0.       0.     593.       0.     105.      10.    87.94
       .21      .00     8.77      .00     .015     .015     .015     .000    71.44   977.00
   .000465     238.     224.     209.        2        0        0      .00    46.00  1023.00
0
 *SECNO 5109.800
   5109.80    12.69    84.90      .00      .00    86.18     1.28      .38      .03    88.71
     5200.       0.    5200.       0.       0.     572.       0.     115.      11.    88.71
       .23      .00     9.09      .00     .015     .015     .015     .000    72.21   977.00
   .000516     771.     771.     771.        2        0        0      .00    46.00  1023.00
0
 *SECNO 5178.000

 3470 ENCROACHMENT STATIONS=     975.0    1025.0  TYPE=     1  TARGET=      50.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       89.00 ELREA=       89.00

   5178.00    11.86    84.97      .00      .00    86.22     1.25      .04      .00    89.00
     5200.       0.    5200.       0.       0.     580.       0.     116.      11. 100000.00
       .24      .00     8.96      .00     .015     .015     .015     .000    73.11   975.00
   .000513      69.      68.      70.        2        0        0      .00    49.99  1025.00
0
 *SECNO 5236.000

 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670
1
  12-05-89     10:19:25                                                                                 PAGE   23


    SECNO     DEPTH    CWSEL    CRIWS    WSELK     EG       HV       HL       OLOSS   BANK ELEV
    Q         QLOB     QCH      QROB     ALOB      ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME      VLOB     VCH      VROB     XNL       XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE     XLOBL    XLCH     XLOBR    ITRIAL    IDC      ICONT    CORAR    TOPWID     ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       89.00 ELREA=       89.00

         KING ROAD & MCKEE ROAD BOX CULVERT
   5236.00    11.63    84.84      .00      .00    86.32     1.48      .03      .07    89.00
     5200.       0.    5200.       0.       0.     532.       0.     117.      11. 100000.00
       .24      .00     9.78      .00     .015     .015     .015     .000    73.21   975.33
   .000640      50.      58.      88.        2        0        0      .00    46.66  1022.00
0
 CCHV=    .300 CEHV=    .500
 *SECNO 5236.100

 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.70 ELREA=       85.70

   5236.10    11.63    84.84      .00      .00    86.32     1.48      .00      .00    85.70
     5200.       0.    5200.       0.       0.     532.       0.     117.      11. 100000.00
       .24      .00     9.78      .00     .015     .015     .015     .000    73.21   975.33
   .000640       0.       0.       0.        0        0        0      .00    46.67  1022.00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU      ELCHD
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*SECNO 5272.000
CLASS A LOW FLOW

3420 BRIDGE W.S.=     84.69 BRIDGE VELOCITY=,     10.07      CALCULATED CHANNEL AREA=,      517.

 EGPRS      EGLWC       H3       QWEIR       QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                   AREA
     84.84     86.34       .00         0.     5200.      572.       565.       85.77     87.20



3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.77 ELREA=       85.77

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   SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
   Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
   TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
   SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID     ENDST


  5272.00    11.56     84.84       .00       .00     86.34      1.50       .02       .00    85.77
    5200.       0.     5200.        0.        0.      529.        0.      118.       11. 100000.00
      .24      .00      9.84       .00      .000      .015      .000      .000     73.28   975.33
  .000651      36.       36.       36.         0         0         0       .00     46.67  1022.00
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK         XKOR       COFQ       RDLEN      BWC       BWP       BAREA      SS        ELCHU     ELCHD
      .00        .00        .01      46.67      46.67      2.67    473.68       .00      73.28     73.28

*SECNO 5278.000
3280 CROSS SECTION   5278.00 EXTENDED      1.94 FEET

CLASS A LOW FLOW

3420 BRIDGE W.S.=     84.57 BRIDGE VELOCITY=,     10.46      CALCULATED CHANNEL AREA=,      497.

 EGPRS      EGLWC       H3       QWEIR       QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                   AREA
     84.84     86.57       .00         0.     5200.      474.       553.       85.85     87.50



3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.85 ELREA=       82.90

  5278.00    11.55     84.84       .00       .00     86.57      1.73       .23       .00    85.85
    5200.       0.     5200.        0.        0.      492.        0.      118.       11. 100000.00
      .24      .00     10.57       .00      .000      .015      .000      .000     73.29   975.33
  .000825       6.        6.        6.         0         0         0       .00     46.67  1022.00
0

SPECIAL BRIDGE

5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
SB  XK         XKOR       COFQ       RDLEN      BWC       BWP       BAREA      SS        ELCHU     ELCHD
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#SECNO 5387.000
3280 CROSS SECTION   5387.00 EXTENDED      1.96 FEET

1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 PRESSURE FLOW


  EGPRS      EGLWC       H3       QWEIR       QPR        BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
     87.27     86.94       .32        0.      5200.      474.      558.       85.97     87.50


 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.97 ELREA=       83.69

   5387.00    12.17     85.65      .00       .00     87.27     1.62       .70       .00    85.97
     5200.       0.     5200.       0.        0.      509.       0.      119.       11. 100000.00
       .24      .00     10.22      .00      .000      .015     .000      .000     73.48    975.33
   .000758     109.      109.     109.        3         0         0       .00     46.67   1022.00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR       COFQ       RDLEN      BWC       BWP       BAREA      SS        ELCHU      ELCHD
       .00        .00        .01      46.67      46.67      1.67     523.62       .00      73.48      73.48

 #SECNO 5393.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     85.52 BRIDGE VELOCITY=,       9.60      CALCULATED CHANNEL AREA=,       542.

  EGPRS      EGLWC       H3       QWEIR       QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
     85.65     87.27       .00        0.      5200.      524.      563.       85.98     87.60


 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.98 ELREA=       85.98

   5393.00    12.16     85.65      .00       .00     87.27     1.63       .00       .00    85.98
     5200.       0.     5200.       0.        0.      508.       0.      119.       11. 100000.00
       .24      .00     10.24      .00      .000      .015     .000      .000     73.49    975.33
   .000760       6.        6.       6.        0         0         0       .00     46.67   1022.00
0
1
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     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
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 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR     COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
       .00       .00       .01     46.67     46.67      1.67    523.62       .00     73.49     73.49

 *SECNO 5417.700
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     85.52 BRIDGE VELOCITY=,      9.61      CALCULATED CHANNEL AREA=,      541.

  EGPRS      EGLWC      H3       QWEIR      QLOW      BAREA  TRAPEZOID      ELLC     ELTRD
                                                               AREA
      85.65     87.29       .00        0.     5200.      524.      564.      86.03     87.70



 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.03 ELREA=       86.03

   5417.70     12.11     85.65       .00       .00     87.29      1.64       .02       .00     86.03
     5200.        0.     5200.        0.        0.      506.        0.      119.       11. 100000.00
       .24       .00     10.28       .00      .000      .015      .000      .000     73.54    975.33
   .000771       25.       25.       25.         0         0         0       .00     46.67   1022.00
0
1
 PROFILE FOR STREAM  PRELIMINARY RUN #1



 PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA


 ELEVATION    55.       60.       65.       70.       75.       80.       85.       90.       95.      100.
     SECNO   CUMDIS

     50.00     0.  C        I.         .         .         .         WE       L.         .         .         .         .
              40.  C        I.         .         .         .         WE       L.         .         .         .         .
              80.  C        I.         .         .         .         WE       L.         .         .         .         .
             120.  C        I.         .         .         .         WE       L.         .         .         .         .
             160.  C        I.         .         .         .         WE       L.         .         .         .         .
             200.  C        I.         .         .         .         WE       L.         .         .         .         .
             240.  C        I.         .         .         .         WE       L.         .         .         .         .
    296.00   280.  C        I.         .         .         .         .E       L.         .         .         .         .
    321.00   320.  C        I.         .         .         .         .E       L.         .         .         .         .
    326.00   360.  C         .        I.         .         .         WE     L  .         .         .         .         .
    350.90   400.  C         .        I.         .         .         WE     L  .         .         .         .         .
    351.00   440.  C         .        I.         .         .         WE     L  .         .         .         .         .
    485.00   480.  C         .        I.         .         .         .E     L  .         .         .         .         .
             520.  C         .        I.         .         .         .E     L  .         .         .         .         .
             560.  C         .        I.         .         .         .E     L  .         .         .         .         .
             600.  C         .        I.         .         .         .E     L  .         .         .         .         .
             640.  C         .         I         .         .         .E     L  .         .         .         .         .
             680.  C         .         I         .         .         .E     L  .         .         .         .         .
    750.00   720.  C         .         I         .         .         .E     L  .         .         .         .         .
             760.  C         .         I         .         .         .E     L  .         .         .         .         R
    850.00   800.  C         .         I         .         .         .WE     L .         .         .         .         R
    850.10   840.  C         .         I         .         .         .WE     L .         .         .         .         R
             880.  C         .         I         .         .         .WE     L .         .         .         .         R
             920.  C         .         I         .         .         .WE     L .         .         .         .         R
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1027.30  1040.  C         .         I         .         .         .WE     L .         .         .         .         R
1042.00  1080.  C         .         .I        .         .         W  E    L .         .         .         .         R
1042.10  1120.  C         .         .I        .         .         W  E      .L        .         .         .         R
1079.80  1160.  C         .         .I        .         .         W  E      .L        .         .         .         R
1079.90  1200.  C         .         .I        .         .         W  E    L .         .         .         .         .
1110.00  1240.  C         .         .I        .         .         .W E     L.         .         .         .         .
1262.90  1280.  C         .         .I        .         .         . WE     L.         .         .         .         .
1338.10  1320.  C         .         . I       .         .         . WE      L         .         .         .         .
1363.00  1360.  C         .         . I       .         .         .W E      L         .         .         .         R
1383.00  1400.  C         .         . I       .         .         . W E     L         .         .         .         R
1400.00  1440.  C         .         . I       .         .         .W  E     L         .         .         .         R
1481.00  1480.  C         .         . I       .         .         .  W E    L         .         .         .         .
         1520.  C         .         . I       .         .         .  W E    L         .         .         .         .
         1560.  C         .         .  I      .         .         .  W E    L         .         .         .         .
         1600.  C         .         .  I      .         .         .  W E    .L        .         .         .         .
         1640.  C         .         .  I      .         .         .  W E    .L        .         .         .         .
         1680.  C         .         .  I      .         .         .  W E    .L        .         .         .         .
         1720.  C         .         .  I      .         .         .  W E    .L        .         .         .         .
1788.00  1760.  C         .         .   I     .         .         .  W E    .L        .         .         .         .
1834.00  1800.  C         .         .       I .         .         .  W E  L .         .         .         .         R
1869.50  1840.  C         .         .       I .         .         . W   E  L.         .         .         .         R
         1880.  C         .         .        I.         .         .  W  E   L         .         .         .         R
         1920.  C         .         .        I.         .         .  W  E   . L       .         .         .         R
         1960.  C         .         .        I.         .         .  W  E   .   L     .         .         .         R
2027.00  2000.  C         .         .        I.         .         .  W  E   .    L    .         .         .         R
2057.00  2040.  C         .         .         I         .         .  W  E   .LM       .         .         .         R
2119.00  2080.  C         .         .         I         .         .  W  E   .  L      .         .         .         R
         2120.  C         .         .         I         .         .  W  E   .  L      .         .         .         R
         2160.  C         .         .         I         .         .  W   E  .  L      .         .         .         R
         2200.  C         .         .         I         .         .  W   E  .  L      .         .         .         R
         2240.  C         .         .         I         .         .  W   E  .  L      .         .         .         R
         2280.  C         .         .         I         .         .  W   E  .  L      .         .         .         R
         2320.  C         .         .         I         .         .   W  E  .  L      .         .         .         R
         2360.  C         .         .         I         .         .   W  E  .  L      .         .         .         R
         2400.  C         .         .         I         .         .   W  E  .  L      .         .         .         R
         2440.  C         .         .         I         .         .   W  E  .  L      .         .         .         R
2499.00  2480.  C         .         .         I         .         .   W  E  .  L      .         .         .         .
         2520.  C         .         .         I         .         .    W E  .  L      .         .         .         R
         2560.  C         .         .         .I        .         .    W E  .   L     .         .         .         R
2621.40  2600.  C         .         .         .I        .         .     WE  .   L     .         .         .         R
2646.40  2640.  C         .         .         .I        .         .     WE  .   L     .         .         .         R
2646.50  2680.  C         .         .         .I        .         .      E  .   L     .         .         .         R
         2720.  C         .         .         .I        .         .      WE .   L     .         .         .         R
2775.00  2760.  C         .         .         .I        .         .      WE .   L     .         .         .         R
         2800.  C         .         .         .I        .         .      WE .   L     .         .         .         R
         2840.  C         .         .         .I        .         .      WE .   L     .         .         .         R
2917.10  2880.  C         .         .         .I        .         .      WE .   L     .         .         .         .
         2920.  C         .         .         .I        .         .      WE .   L     .         .         .         .
3000.00  2960.  C         .         .         .I        .         .      WE .   L     .         .         .         .
3000.10  3000.  C         .         .         .I        .         .      WE .   L     .         .         .         R
3048.40  3040.  C         .         .         .I        .         .       E .   L     .         .         .         R
3100.00  3080.  C         .         .         .I        .         .       E .   L     .         .         .         R
         3120.  C         .         .         .I        .         .       E .   L     .         .         .         R
         3160.  C         .         .         .I        .         .       E .   L     .         .         .         R
         3200.  C         .         .         .I        .         .       E .   L     .         .         .         R
         3240.  C         .         .         .I        .         .       E .   L     .         .         .         R
3300.00  3280.  C         .         .         .I        .         .       WE.   L     .         .         .         .
3300.10  3320.  C         .         .         .I        .         .       WE.   L     .         .         .         R
3330.50  3360.  C         .         .         .I        .         .       WE.   L     .         .         .         .
         3400.  C         .         .         .I        .         .       WE.   L     .         .         .         .
         3440.  C         .         .         .I        .         .       WE.   L     .         .         .         .
         3480.  C         .         .         .I        .         .       WE.   L     .         .         .         .
         3520.  C         .         .         . I       .         .       WE.     L   .         .         .         .
         3560.  C         .         .         . I       .         .       WE.     L   .         .         .         .
         3680.  C         .         .         . I       .         .       WE.    L    .         .         .         R
3762.90  3720.  C         .         .         . I       .         .       WE.    L    .         .         .         R
3763.00  3760.  C         .         .         . I       .         .       WE.    L    .         .         .         R
3788.00  3800.  C         .         .         . I       .         .       WE.    L    .         .         .         .
3788.10  3840.  C         .         .         . I       .         .       WE.    L    .         .         .         R
3838.00  3880.  C         .         .         . I       .         .      W  .E   L    .         .         .         R
         3920.  C         .         .         . I       .         .      W  .E   L    .         .         .         R
         3960.  C         .         .         . I       .         .       W .E   L    .         .         .         R
         4000.  C         .         .         . I       .         .       W .E   L    .         .         .         R
         4040.  C         .         .         . I       .         .       W .E   L    .         .         .         R
4115.00  4080.  C         .         .         . I       .         .        W.E   L    .         .         .         .
         4120.  C         .         .         .  I      .         .        W.E    L   .         .         .         .
         4160.  C         .         .         .  I      .         .        W.E    L   .         .         .         .
         4200.  C         .         .         .  I      .         .        W.E    L   .         .         .         .
         4240.  C         .         .         .  I      .         .        W.E    L   .         .         .         .
         4280.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
4338.50  4320.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4360.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4400.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4440.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4480.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4520.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4560.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4600.  C         .         .         .  I      .         .        W. E   L   .         .         .         .
         4640.  C         .         .         .   I     .         .        W. E    L  .         .         .         .
         4680.  C         .         .         .   I     .         .        W. E    L  .         .         .         .
         4720.  C         .         .         .   I     .         .        W. E    L  .         .         .         .
         4760.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         4800.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         4840.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         4880.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         4920.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         4960.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         5000.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         5040.  C         .         .         .   I     .         .         W E    L  .         .         .         .
5109.80  5080.  C         .         .         .   I     .         .         W E    L  .         .         .         .
         5120.  C         .         .         .    I    .         .         W E     L .         .         .         R
5178.00  5160.  C         .         .         .     I   .         .         W E     L .         .         .         R
5236.00  5200.  C         .         .         .     I   .         .         W  E    L .         .         .         R
5236.10  5240.  C         .         .         .     I   .         .         WL E      .         .         .         R
5272.00  5280.  C         .         .         .      I  .         .         W LE      .         .         .         R
5278.00  5320.  C         .         .         .      I  .         .     M   W LE      .         .         .         R
5387.00  5360.  C         .         .         .      I  .         .      M  .WL  E    .         .         .         R
5393.00  5400.  C         .         .         .      I  .         .         .WL  E    .         .         .         R
5417.70  5440.  C         .         .         .      I  .         .         .WL  E    .         .         .         R
1
 12-05-89    10:19:25                                                                                                      PAGE   27




                                                                                         THIS RUN EXECUTED 12-05-89

**************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST


PRELIMINARY RUN #1
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      SECNO     XLBEL      RBEL     ELMIN      SSTA     ENDST         Q     DEPTH     CWSEL      AREA    TOPWID       VCH      EG

     50.000     84.30     84.30     59.30    933.20   1066.80   6100.00     20.90     80.20   1918.62    133.60      3.18   80.3

    296.000     84.45     84.45     59.45    933.41   1066.59   6100.00     20.80     80.25   1904.71    133.18      3.20   80.4

    321.000     84.46     84.46     59.46    933.42   1066.58   6100.00     20.79     80.25   1904.11    133.16      3.20   80.4

    326.000     83.46     83.46     64.56    943.91   1056.09   6100.00     15.55     80.11   1260.79    112.19      4.84   80.4

    350.900     83.48     83.48     64.58    943.93   1056.07   6100.00     15.54     80.12   1259.30    112.14      4.84   80.4

    351.000     83.48     83.48     64.58    943.90   1056.10   6100.00     15.54     80.12   1260.95    112.19      4.84   80.4

    485.000     83.56     83.56     64.66    928.47   1071.53   6100.00     15.72     80.38   1645.55    143.06      3.71   80.6

    750.000     83.72     83.72     64.82    928.66   1071.34   6100.00     15.67     80.49   1624.53    142.68      3.75   80.7

    850.000     83.78 100000.00     64.88    943.90   1056.10   6100.00     15.55     80.43   1261.08    112.20      4.84   80.7

    850.100     83.78 100000.00     64.88    944.09   1055.91   6100.00     15.54     80.42   1230.03    111.83      4.96   80.8

    978.530     84.04 100000.00     65.14    958.98   1041.02   6100.00     15.12     80.26    879.36     82.05      6.94   81.0

    978.620     84.04 100000.00     65.14    958.97   1041.02   6100.00     15.12     80.26    879.49     82.05      6.94   81.0

   1027.300     84.14 100000.00     65.24    959.11   1040.89   6100.00     15.02     80.26    872.12     81.77      6.99   81.0

   1042.000     84.17 100000.00     65.27    970.50   1029.50   6100.00     14.78     80.05    694.61     58.99      8.78   81.2

   1042.100     85.43 100000.00     65.27    971.51   1028.49   6100.00     14.78     80.05    694.75     56.98      8.78   81.2

   1079.800     85.44 100000.00     65.35    971.51   1028.49   6100.00     14.88     80.23    700.23     56.98      8.71   81.4

   1079.900     84.20     84.20     65.35    970.40   1029.60   6100.00     14.88     80.23    700.81     59.20      8.70   81.4
1
  12-05-89     10:19:25                                                                                   PAGE   28


      SECNO     XLBEL      RBEL     ELMIN      SSTA     ENDST         Q     DEPTH     CWSEL      AREA    TOPWID       VCH      EG


   1110.000     84.31     84.31     65.41    958.65   1041.11   6100.00     15.33     80.74    895.10     82.46      6.81   81.4

   1262.900     84.62     84.62     65.72    959.11   1040.66   6100.00     15.03     80.75    870.71     81.55      7.01   81.5

   1338.100     84.77     84.77     65.87    959.31   1040.45   6100.00     14.89     80.76    859.94     81.14      7.09   81.5

   1363.000     84.82 100000.00     65.92    969.51   1030.49   6100.00     14.66     80.58    704.83     60.98      8.65   81.7

   1383.000     84.86 100000.00     65.96    969.51   1030.49   6100.00     14.89     80.85    748.10     60.98      8.15   81.8

   1400.000     84.87 100000.00     65.99    970.01   1019.41   6100.00     14.60     80.59    604.38     49.40     10.09   82.17

   1481.000     85.05     85.05     66.15    959.60   1040.40   6100.00     15.36     81.51    869.36     80.80      7.02   82.2

   1788.000     85.66     85.66     66.76    960.48   1039.52   6100.00     14.79     81.55    823.52     79.03      7.41   82.4

   1834.000     84.00 100000.00     69.12    966.01   1033.99   6100.00     12.18     81.30    646.85     67.99      9.43   82.6
   2027.000     87.56 100000.00     69.66    971.51   1028.49   6100.00     11.78     81.44    597.63     56.98     10.21    83.0
   2057.000     85.25 100000.00     69.75    966.00   1033.99   6100.00     11.91     81.66    628.72     67.99      9.70    83.1
   2119.000     86.31 100000.00     69.81    965.02   1034.98   6100.00     11.80     81.61    601.66     69.95     10.14    83.2
   2499.000     86.69     86.69     70.19    965.25   1034.75   6100.00     11.64     81.83    591.21     69.49     10.32    83.4
   2621.400     86.81 100000.00     70.31    944.17   1055.83   6100.00     12.92     83.23   1108.48    111.66      5.50    83.7
   2646.400     86.82 100000.00     70.32    944.15   1055.85   6100.00     12.93     83.25   1109.55    111.70      5.50    83.7
   2646.500     86.82 100000.00     70.32    944.14   1055.86   6100.00     12.93     83.25   1110.33    111.73      5.49    83.7
   2775.000     86.89 100000.00     70.39    928.80   1056.20   6100.00     13.10     83.49   1265.68    127.40      4.82    83.8
   2917.100     86.96     86.96     70.46    928.68   1056.32   6100.00     13.15     83.61   1273.40    127.64      4.79    83.9
   3000.000     87.00     87.00     70.50    928.64   1056.36   6100.00     13.18     83.68   1276.13    127.73      4.78    84.0
   3000.100     86.99 100000.00     70.49    928.61   1056.39   6100.00     13.19     83.68   1278.05    127.79      4.77    84.0
   3048.400     87.02 100000.00     70.52    928.48   1071.52   6100.00     13.26     83.78   1391.50    143.05      4.38    84.0
   3100.000     87.05 100000.00     70.55    928.45   1071.55   6100.00     13.28     83.83   1427.42    143.11      4.27    84.1
   3300.000     87.15     87.15     70.65    928.36   1071.64   6100.00     13.32     83.97   1433.50    143.28      4.26    84.2
   3300.100     87.15 100000.00     70.65    928.37   1071.63   6100.00     13.31     83.96   1433.07    143.26      4.26    84.2
   3330.500     87.17     87.17     70.67    928.37   1071.63   6100.00     13.31     83.98   1432.87    143.26      4.26    84.2

1
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    SECNO      XLBEL      RBEL     ELMIN      SSTA     ENDST         Q     DEPTH     CWSEL      AREA    TOPWID       VCH        EG


   3662.900     87.34     87.34     70.84    928.28   1071.72   6100.00     13.36     84.20   1439.23    143.44      4.24     84.48
   3762.900     87.38 100000.00     70.88    943.42   1056.58   6100.00     13.29     84.17   1150.49    113.15      5.30     84.61
   3763.000     87.38 100000.00     70.88    943.42   1056.58   6100.00     13.29     84.17   1150.50    113.15      5.30     84.61
   3788.000     87.39     87.39     70.89    943.40   1056.60   6100.00     13.30     84.19   1151.85    113.20      5.30     84.62
   3788.100     87.39 100000.00     70.89    943.49   1056.51   6100.00     13.29     84.18   1121.20    113.02      5.44     84.64
   3838.000     87.44 100000.00     70.94    977.00   1023.00   6100.00     12.58     83.52    567.36     45.99     10.75     85.32
   4115.000     87.72     87.72     71.22    977.00   1023.00   5200.00     13.27     84.49    598.96     46.00      8.68     85.67
   4338.500     87.94     87.94     71.44    977.00   1023.00   5200.00     13.14     84.58    592.78     46.00      8.77     85.77
   5109.800     88.71     88.71     72.21    977.00   1023.00   5200.00     12.69     84.90    571.86     46.00      9.09     86.16
   5178.000     89.00 100000.00     73.11    975.00   1025.00   5200.00     11.86     84.97    580.43     49.99      8.96     86.22
   5236.000     89.00 100000.00     73.21    975.33   1022.00   5200.00     11.63     84.84    531.89     46.66      9.78     86.32
   5236.100     85.70 100000.00     73.21    975.33   1022.00   5200.00     11.63     84.84    531.89     46.67      9.78     86.32
   5272.000     85.77 100000.00     73.28    975.33   1022.00   5200.00     11.56     84.84    528.63     46.67      9.84     86.34
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      5387.000     85.97 100000.00     73.48    975.33   1022.00   5200.00     12.17     85.65    508.60     46.67     10.22    87.2
      5393.000     85.98 100000.00     73.49    975.33   1022.00   5200.00     12.16     85.65    508.03     46.67     10.24    87.2
      5417.700     86.03 100000.00     73.54    975.33   1022.00   5200.00     12.11     85.65    505.70     46.67     10.28    87.2

1
 12-05-89     10:19:25                                                                                            PAGE   30



 SUMMARY OF ERRORS AND SPECIAL NOTES


1
 12-05-89     10:20:34                                                                                            PAGE    1



                                                                                      THIS RUN EXECUTED 12-05-89
************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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1*********************************************************                       **************************************
*
 *  WATER SURFACE PROFILES                            *                          *  U.S. ARMY CORPS OF ENGINEERS
*
 *  VERSION OF NOVEMBER 1976                          *                          *  THE HYDROLOGIC ENGINEERING CENTER
*
 *  UPDATED MAY 1984                                  *                          *  609 SECOND STREET, SUITE D
*
 *  IBM-PC-XT VERSION AUGUST 1985                     *                          *  DAVIS, CALIFORNIA 95616
*
 *  RUN DATE  12-05-89   TIME  10:27:14                 *                          *  (916) 440-2105 (FTS) 448-2105
  *
 *********************************************************                       **************************************
*




                                                  X     X  XXXXXXX   XXXXX              XXXXX
                                                  X     X  X        X     X            X     X
                                                  X     X  X        X                        X
                                                  XXXXXXX  XXXX     X          XXXXX    XXXXX
                                                  X     X  X        X                  X
                                                  X     X  X        X     X            X
                                                  X     X  XXXXXXX   XXXXX             XXXXXXX
1
 12-05-89     10:27:15                                                                                      PAGE    1



                                                                                   THIS RUN EXECUTED 12-05-89
 ******************************************************
   HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
   ERROR CORR -  01,02,03,04,05,06
   MODIFICATION -  50,51,52,53,54,55,56
   IBM-PC-XT VERSION AUGUST 1985
 ******************************************************


 C
 T1      LOWER SILVER CREEK, REACH 1 & 2
 T2      10-YEAR EVENT (DESIGN FOR STABILITY OF CREEK)
 T3      PRELIMINARY RUN #1

 J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

        0.        2.        0.        0.   .000000       .00       .0        0.    76.900      .000

 J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      -1.000      .000     5.000      .000    40.000      .000      .000      .000      .000      .000

 J3  VARIABLE CODES FOR SUMMARY PRINTOUT

      38.000    23.000    24.000    42.000    53.000    54.000    43.000     8.000     1.000    25.000


       4.000    26.000     3.000      .000      .000      .000      .000      .000      .000      .000
 NC      .029      .029      .029      .100      .300      .000      .000      .000      .000      .000
 QT     1.000  4100.000      .000      .000      .000      .000      .000      .000      .000      .000
        CROSS SECTIONS LOOKING UPSTREAM
        AT CONFLUENCE WITH COYOTE CREEK
 X1    50.000     7.000   925.000  1075.000      .000      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   910.000      .000  1090.000      .000    84.300    84.300      .000
 GR    84.300   910.000    84.300   925.000    59.300   975.000    59.300  1000.000    59.300  1025.000
 GR    84.300  1075.000    84.300  1090.000      .000      .000      .000      .000      .000      .000

 NC      .030      .030      .030      .100      .300      .000      .000      .000      .000      .000
 X1   296.000     7.000   925.000  1075.000   246.000   246.000   246.000      .000      .000      .000
 X3    10.000      .000      .000   910.000      .000  1090.000      .000    84.450    84.450      .000
 GR    84.450   910.000    84.450   925.000    59.450   975.000    59.450  1000.000    59.450  1025.000
 GR    84.450  1075.000    84.450  1090.000      .000      .000      .000      .000      .000      .000

 X1   321.000     7.000   925.000  1075.000    25.000    25.000    25.000      .000      .000      .000
 X3    10.000      .000      .000   910.000      .000  1090.000      .000    84.460    84.460      .000
 GR    84.460   910.000    84.460   925.000    59.460   975.000    59.460  1000.000    59.460  1025.000
 GR    84.460  1075.000    84.460  1090.000      .000      .000      .000      .000      .000      .000
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        5.1' GROUTED ROCK DROP STRUCTURE
 X1   326.000     7.000   937.200  1062.800    11.200    11.200     5.000      .000      .000      .000
 X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.460    83.460      .000
 GR    83.460   915.000    83.460   937.200    64.560   975.000    64.560  1000.000    64.560  1025.000
 GR    83.460  1062.800    83.460  1085.000      .000      .000      .000      .000      .000      .000

 NC      .029      .029      .029      .100      .300      .000      .000      .000      .000      .000
 X1   350.900     9.000   937.200  1062.800    24.900    24.900    24.900      .000      .000      .000
 X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.480    83.480      .000
 GR    83.480   915.000    83.480   922.200    83.480   937.200    64.580   975.000    64.580  1000.000
 GR    64.580  1025.000    83.480  1062.800    84.580  1077.800    83.480  1085.000      .000      .000

 X1   351.000     9.000   922.200  1077.800    15.100    15.100      .100      .000      .000      .000
 X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.480    83.480      .000
 GR    83.480   915.000    83.480   922.200    83.480   937.200    64.580   975.000    64.580  1000.000
 GR    64.580  1025.000    83.480  1062.800    83.480  1077.800    83.480  1085.000      .000      .000

 X1   485.000    11.000   922.200  1077.800   134.000   134.000   134.000      .000      .000      .000
 X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.560    83.560      .000
 GR    83.560   915.000    83.560   922.200    68.460   952.000    68.460   967.000    64.660   975.000
 GR    64.660  1000.000    64.660  1025.000    68.460  1033.000    68.460  1048.000    83.560  1077.800
 GR    83.560  1085.000      .000      .000      .000      .000      .000      .000      .000      .000

 NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
 X1   750.000    11.000   922.200  1077.800   244.620   285.380   265.000      .000      .000      .000
 X3    10.000      .000      .000   915.000      .000  1085.000      .000    83.720    83.720      .000
 GR    83.720   915.000    83.720   922.200    68.820   952.000    68.820   967.000    64.820   975.000
 GR    64.820  1000.000    64.820  1025.000    68.820  1033.000    68.820  1048.000    83.720  1077.800
 GR    83.720  1085.000      .000      .000      .000      .000      .000      .000      .000      .000

        BEGIN CONCRETE LINING
 X1   850.000     7.000   922.200  1077.800    92.310   107.690   100.000      .000      .000      .000
 X3    10.000      .000      .000   922.200      .000  1077.800      .000    83.780    83.780      .000
 GR    83.780   922.200    83.780   937.200    64.880   975.000    64.880  1000.000    64.880  1025.000
 GR    83.780  1062.800    83.780  1077.800      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1   850.100     7.000   922.200  1077.800    15.100    15.100      .100      .000      .000      .000
 X3    10.000      .000      .000   922.200      .000  1077.800      .000    83.780    83.780      .000
 GR    83.780   922.200    83.780   937.200    65.380   975.000    64.880  1000.000    65.380  1025.000
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X1   978.530     7.000   938.150  1061.850   129.000   129.000   128.430      .000      .000      .000
X3    10.000      .000      .000   938.150      .000  1061.850      .000    84.040    84.040      .000
GR    84.040   938.150    84.040   953.150    65.640   981.500    65.140  1000.000    65.640  1018.500
GR    84.040  1046.850    84.040  1061.850      .000      .000      .000      .000      .000      .000

X1   978.620     5.000   953.150  1046.850    15.100    15.100      .090      .000      .000      .000
X3    10.000      .000      .000   953.150      .000  1046.850      .000    84.040    84.040      .000
GR    84.040   953.150    65.640   981.500    65.140  1000.000    65.640  1018.500    84.040  1046.850
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X1  1027.300     5.000   953.150  1046.850    38.280    59.070    48.680      .000      .000      .000
X3    10.000      .000      .000   953.150      .000  1046.850      .000    84.140    84.140      .000
GR    84.140   953.150    65.740   981.500    65.240  1000.000    65.740  1018.500    84.140  1046.850

X1  1042.000     5.000   967.330  1032.670    14.700    14.700    14.700      .000      .000      .000
X3    10.000      .000      .000   967.330      .000  1032.670      .000    84.170    84.170      .000
GR    84.170   967.330    65.770   981.500    65.270  1000.000    65.770  1018.500    84.170  1032.670

      WOOSTER AVENUE BRIDGE
X1  1042.100     7.000   971.500  1028.500     3.510     3.370      .100      .000      .000      .000
X3    10.000      .000      .000   971.500      .000  1028.500      .000    85.430    85.250      .000
GR    85.430   971.500    78.600   971.510    65.770   981.500    65.270  1000.000    65.770  1018.500
GR    78.600  1028.490    85.250  1028.500      .000      .000      .000      .000      .000      .000

SB     1.050     1.560     2.700    57.000    37.000     2.670   994.290      .750      .000      .000
X1  1079.800     7.000   971.500  1028.500    37.700    37.700    37.700      .000      .000      .000
X2      .000      .000     1.000    85.480    86.920      .000      .000      .000      .000      .000
X3    10.000      .000      .000   971.500      .000  1028.500      .000    85.450    85.300      .000
GR    85.440   971.500    78.680   971.510    65.850   981.500    65.350  1000.000    65.850  1018.500
GR    78.680  1028.490    85.290  1028.500      .000      .000      .000      .000      .000      .000

X1  1079.900     7.000   967.330  1032.670     3.430     3.320      .100      .000      .000      .000
X3    10.000      .000      .000   937.000      .000  1070.000      .000    84.200    84.200      .000
GR    84.200   937.000    84.200   967.330    65.850   981.500    65.350  1000.000    65.850  1018.500
GR    84.200  1032.670    84.200  1070.000      .000      .000      .000      .000      .000      .000

NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
X1  1110.000     7.000   953.150  1046.550    34.900    34.900    30.100      .000      .000      .000
X3    10.000      .000      .000   937.000      .000  1070.000      .000    84.310    84.310      .000
GR    84.310   937.000    84.310   953.150    65.910   981.500    65.410  1000.000    65.910  1018.500
GR    84.310  1046.550    84.310  1070.000      .000      .000      .000      .000      .000      .000

NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
X1  1262.900      .000      .000      .000   152.870   152.870   152.870      .000      .310      .000

X1  1338.100      .000      .000      .000    75.200    75.200    75.200      .000      .150      .000

      WESTERN PACIFIC RAILROAD BRIDGE
X1  1363.000     7.000   969.500  1030.500    39.000    21.000    24.900      .000      .000      .000
X3    10.000      .000      .000   969.500      .000  1030.500      .000    84.820    84.820      .000
GR    84.820   969.500    80.420   969.510    66.420   981.500    65.920  1000.000    66.420  1018.500
GR    80.420  1030.490    84.820  1030.500      .000      .000      .000      .000      .000      .000

SB     1.050     1.560     2.700    73.000    45.000     5.330  1212.840     1.000      .000      .000
X1  1383.000     7.000   969.500  1030.500    20.000    20.000    20.000      .000      .000      .000
X2      .000      .000     1.000    85.410    88.660      .000      .000      .000      .000      .000
X3    10.000      .000      .000   969.500      .000  1030.500      .000    84.860    84.860      .000
GR    84.860   969.500    80.460   969.510    66.460   981.500    65.960  1000.000    66.460  1022.500
GR    80.460  1030.490    84.860  1030.500      .000      .000      .000      .000      .000      .000
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 X1  1400.000     6.000   970.000  1020.000     3.000    23.000    17.000      .000      .000      .000
 X3    10.000      .000      .000   970.000      .000  1020.000      .000    84.870    84.890      .000
 GR    84.870   970.000    80.470   970.010    66.490   982.500    65.990  1000.000    66.490  1017.500
 GR    84.890  1020.000      .000      .000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  1481.000     7.000   954.150  1045.850    87.000    80.000    81.000      .000      .000      .000
 X3    10.000      .000      .000   923.500      .000  1047.500      .000    85.050    85.050      .000
 GR    85.050   923.500    85.050   954.150    66.650   982.500    66.150  1000.000    66.650  1017.500
 GR    85.050  1045.850    85.050  1047.500      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  1788.000      .000      .000      .000   307.000   307.000   307.000      .000      .610      .000

 X1  1834.000     7.000   966.000  1034.000    56.000    36.000    46.000      .000      .000      .000
 X3    10.000      .000      .000   966.000      .000  1034.000      .000    84.000    84.000      .000
 GR    84.000   966.000    80.120   966.010    69.120   982.500    69.120  1000.000    69.120  1017.500
 GR    80.120  1033.990    84.000  1034.000      .000      .000      .000      .000      .000      .000

        U.S. HIGHWAY 101 BRIDGE
 X1  1869.500     7.000   971.500  1028.500    31.500    42.000    35.500      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    84.420    84.420      .000
 GR    84.420   971.500    78.920   971.510    69.220   979.000    69.220  1000.000    69.220  1021.000
 GR    78.920  1028.490    84.420  1028.500      .000      .000      .000      .000      .000      .000

 SB      .900     1.560     2.700    57.000    42.000     2.330   890.000      .750      .000      .000
 X1  2027.000     7.000   971.500  1028.500   157.500   157.500   157.500      .000      .000      .000
 X2      .000      .000     1.000    87.000    88.200      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   971.500      .000  1028.500      .000    87.560    87.560      .000
 GR    87.560   971.500    79.360   971.510    69.660   979.000    69.660  1000.000    69.660  1021.000
 GR    79.660  1028.490    87.560  1028.500      .000      .000      .000      .000      .000      .000

 X1  2057.000     7.000   966.000  1034.000    31.000    31.000    30.000      .000      .000      .000
 X3    10.000      .000      .000   966.000      .000  1034.000      .000    85.250    85.250      .000
 GR    85.250   966.000    80.750   966.000    69.750   982.500    69.750  1000.000    69.750  1017.500
 GR    80.750  1033.990    85.750  1034.000      .000      .000      .000      .000      .000      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  2119.000     5.000   957.750  1042.250    65.000    63.000    62.000      .000      .000      .000
 X3    10.000      .000      .000   957.750      .000  1042.250      .000    86.310    86.310      .000
 GR    86.310   957.750    70.310   982.500    69.810  1000.000    70.310  1017.500    86.310  1042.250

 X1  2499.000      .000      .000      .000   380.000   380.000   380.000      .000      .380      .000

 NC      .035      .035      .035      .100      .300      .000      .000      .000      .000      .000
        END CONCRETE LINING, BEGIN EARTH CHANNEL
 X1  2621.400     5.000   937.000  1063.000   128.000   119.000   122.400      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1063.000      .000    86.810    86.810      .000
 GR    86.810   937.000    70.310   970.000    70.310  1000.000    70.310  1030.000    86.810  1063.000
1
  12-05-89     10:27:15                                                                       PAGE    5


 X1  2646.400     5.000   937.000  1063.000    22.000    28.000    25.000      .000      .000      .000
 X3    10.000      .000      .000   937.000      .000  1063.000      .000    86.820    86.820      .000
 GR    86.820   937.000    70.320   970.000    70.320  1000.000    70.320  1030.000    86.820  1063.000

 NC      .025      .025      .025      .100      .300      .000      .000      .000      .000      .000
 X1  2646.500     6.000   922.000  1063.000    15.100      .100      .100      .000      .000      .000
 X3    10.000      .000      .000   922.000      .000  1063.000      .000    86.820    86.820      .000
 GR    86.820   922.000    86.820   937.000    70.320   970.000    70.320  1000.000    70.320  1030.000
 GR    86.820  1063.000      .000      .000      .000      .000      .000      .000      .000      .000
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X3     10.000       .000       .000    922.000       .000   1063.000       .000     86.890     86.890       .000
GR     86.890    922.000     74.390    947.000     74.390    962.000     70.390    970.000     70.390   1000.000
GR     70.390   1030.000     86.890   1063.000       .000       .000       .000       .000       .000       .000

        OPPOSITE NORTH 33RD STREET & MELODY LANE
X1   2917.100       .000       .000       .000    123.750    160.580    142.100       .000       .070       .000

X1   3000.000       .000       .000       .000     82.900     82.900     82.900       .000       .040       .000

X1   3000.100      8.000    922.000   1078.000       .100     15.000       .100       .000       .000       .000
X3     10.000       .000       .000    922.000       .000   1078.000       .000     86.990     86.990       .000
GR     86.990    922.000     74.490    947.000     74.490    962.000     70.490    970.000     70.490   1000.000
GR     70.490   1030.000     86.990   1063.000     86.990   1078.000       .000       .000       .000       .000

X1   3048.400     11.000    922.000   1074.000     48.300     48.300     48.300       .000       .000       .000
X3     10.000       .000       .000    922.000       .000   1074.000       .000     87.020     87.020       .000
GR     87.020    922.000     74.520    947.000     74.520    962.000     70.520    970.000     70.520   1000.000
GR     70.520   1030.000     76.770   1042.500     76.770   1057.500     84.520   1073.000     84.520   1073.990
GR     87.020   1074.000       .000       .000       .000       .000       .000       .000       .000       .000

X1   3100.000     11.000    922.000   1074.000     55.900     47.300     51.600       .000       .000       .000
X3     10.000       .000       .000    922.000       .000   1074.000       .000     87.050     87.050       .000
GR     87.050    922.000     74.550    947.000     74.550    962.000     70.550    970.000     70.550   1000.000
GR     70.550   1030.000     74.550   1038.000     74.550   1053.000     84.550   1073.000     84.550   1073.990
GR     87.050   1074.000       .000       .000       .000       .000       .000       .000       .000       .000

X1   3300.000       .000       .000       .000    216.670    183.330    200.000       .000       .100       .000

X1   3300.100     13.000    926.000   1074.000      4.000       .100       .100       .000       .000       .000
X3     10.000       .000       .000    926.000       .000   1074.000       .000     87.150     87.150       .000
GR     87.150    926.000     84.650    926.010     84.650    927.000     74.650    947.000     74.650    962.000
GR     70.650    970.000     70.650   1000.000     70.650   1030.000     74.650   1038.000     74.650   1053.000
GR     84.650   1073.000     84.650   1073.990     87.150   1074.000       .000       .000       .000       .000

X1   3330.500       .000       .000       .000     32.890     27.830     30.360       .000       .020       .000

X1   3662.900       .000       .000       .000    332.400    332.400    332.400       .000       .170       .000
1
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X1   3762.900      9.000    926.000   1074.000    100.000    100.000    100.000       .000       .000       .000
X3     10.000       .000       .000    926.000       .000   1074.000       .000     87.380     87.380       .000
GR     87.380    926.000     84.880    926.010     84.880    942.000     70.880    970.000     70.880   1000.000
GR     70.880   1030.000     84.880   1058.000     84.880   1073.990     87.380   1074.000       .000       .000

NC       .035       .035       .035       .100       .300       .000       .000       .000       .000       .000
X1   3763.000      9.000    926.000   1074.000       .100       .100       .100       .000       .000       .000
X3     10.000       .000       .000    926.000       .000   1074.000       .000     87.380     87.380       .000
GR     87.380    926.000     84.880    926.010     84.880    942.000     70.880    970.000     70.880   1000.000
GR     70.880   1030.000     84.880   1058.000     84.880   1073.990     87.380   1074.000       .000       .000

X1   3788.000       .000       .000       .000     25.000     25.000     25.000       .000       .010       .000

NC       .015       .015       .015       .300       .500       .000       .000       .000       .000       .000
X1   3788.100      7.000    942.000   1058.000     16.100     16.100       .100       .000       .000       .000
X3     10.000       .000       .000    942.000       .000   1058.000       .000     87.390     87.390       .000
GR     87.390    942.000     84.890    942.010     71.390    970.000     70.890   1000.000     71.390   1030.000
GR     84.890   1057.990     87.390   1058.000       .000       .000       .000       .000       .000       .000

        BEGIN CONCRETE U-FRAME CHANNEL
X1   3838.000      5.000    977.000   1023.000     61.030     61.030     49.900       .000       .000       .000
X3     10.000       .000       .000    977.000       .000   1023.000       .000     87.440     87.440       .000
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 QT     1.000  4100.000      .000      .000      .000      .000      .000      .000      .000      .000
      CONFLUENCE WITH MIGUELITA CREEK (78" CMP)
 X1  4115.000      .000      .000      .000   295.460   258.540   277.000      .000      .280      .000

 NC      .015      .015      .015      .100      .300      .000      .000      .000      .000      .000
 X1  4338.500      .000      .000      .000   238.390   208.610   223.500      .000      .220      .000

 X1  5109.800      .000      .000      .000   771.300   771.300   771.300      .000      .770      .000

 X1  5178.000     5.000   975.000  1025.000    69.000    70.000    68.200      .000      .000      .000
 X3    10.000      .000      .000   975.000      .000  1025.000      .000    89.000    89.000      .000
 GR    89.000   975.000    73.610   975.010    73.110  1000.000    73.610  1024.990    89.000  1025.000

      KING ROAD & MCKEE ROAD BOX CULVERT
 X1  5236.000     5.000   975.330  1022.000    50.000    88.000    58.000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    89.000    89.000      .000
 GR    89.000   975.330    73.700   975.340    73.210  1000.000    73.630  1021.990    89.000  1022.000

 NC      .015      .015      .015      .300      .500      .000      .000      .000      .000      .000
 X1  5236.100     5.000   975.330  1022.000      .100      .100      .100      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.700    85.700      .000
 GR    85.700   975.330    73.700   975.340    73.210  1000.000    73.630  1021.990    85.700  1022.000

 SB      .001      .001      .010    46.670    46.670     1.670   572.240      .000      .000      .000
 X1  5272.000     5.000   975.330  1022.000    35.950    35.950    35.900      .000      .000      .000
 X2      .000      .000     1.000    85.770    87.200      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.770    85.770      .000
 GR    85.770   975.330    73.770   975.340    73.280  1000.000    73.700  1021.990    85.770  1022.000
1
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 SB      .001      .001      .010    46.670    46.670     2.670   473.680      .000      .000      .000
 X1  5278.000     6.000   975.330  1022.000     6.000     6.000     6.000      .000      .000      .000
 X2      .000      .000     1.000    85.850    87.500      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.850    82.900      .000
 GR    85.850   975.330    73.850   975.340    73.290  1000.000    74.900  1000.010    75.300  1021.990
 GR    82.900  1022.000      .000      .000      .000      .000      .000      .000      .000      .000

 SB      .900     1.300     2.700    46.670    46.670     2.670   473.680      .000      .000      .000
 X1  5387.000     6.000   975.330  1022.000   109.000   109.000   109.000      .000      .000      .000
 X2      .000      .000     1.000    85.970    87.500      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.970    83.690      .000
 GR    85.970   975.330    73.970   975.340    73.480  1000.000    75.690  1000.010    76.110  1021.990
 GR    83.690  1022.000      .000      .000      .000      .000      .000      .000      .000      .000

 SB      .001      .001      .010    46.670    46.670     1.670   523.620      .000      .000      .000
 X1  5393.000     6.000   975.330  1022.000     6.000     6.000     6.000      .000      .000      .000
 X2      .000      .000     1.000    85.980    87.600      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    85.980    85.980      .000
 GR    85.980   975.330    73.980   975.340    73.490  1000.000    75.700  1000.010    76.120  1021.990
 GR    85.980  1022.000      .000      .000      .000      .000      .000      .000      .000      .000

 SB      .001      .001      .010    46.670    46.670     1.670   523.620      .000      .000      .000
 X1  5417.700     6.000   975.330  1022.000    24.700    24.700    24.700      .000      .000      .000
 X2      .000      .000     1.000    86.030    87.700      .000      .000      .000      .000      .000
 X3    10.000      .000      .000   975.330      .000  1022.000      .000    86.030    86.030      .000
 GR    86.030   975.330    74.030   975.340    73.540  1000.000    75.750  1000.010    76.170  1021.990
 GR    86.030  1022.000      .000      .000      .000      .000      .000      .000      .000      .000
 EJ      .000      .000      .000      .000      .000      .000      .000      .000      .000      .000
1
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     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN       SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID      ENDST


 *PROF 1

 CCHV=    .100 CEHV=    .300
 *SECNO 50.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.30 ELREA=       84.30

         CROSS SECTIONS LOOKING UPSTREAM
         AT CONFLUENCE WITH COYOTE CREEK
    50.00    17.60    76.90      .00    76.90    77.02      .12      .00      .00    84.30
    4100.       0.    4100.       0.       0.    1500.       0.       0.       0.    84.30
      .00      .00     2.73      .00     .029     .029     .029     .000    59.30   939.80
  .000108       0.       0.       0.        0        0        0      .00   120.40  1060.20
0
 CCHV=    .100 CEHV=    .300
 *SECNO 296.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.45 ELREA=       84.45

   296.00    17.48    76.93      .00      .00    77.04      .12      .03      .00    84.45
    4100.       0.    4100.       0.       0.    1485.       0.       8.       1.    84.45
      .02      .00     2.76      .00     .030     .030     .030     .000    59.45   940.05
  .000119     246.     246.     246.        0        0        0      .00   119.91  1059.95
0
 *SECNO 321.000

 3470 ENCROACHMENT STATIONS=     910.0    1090.0  TYPE=     1  TARGET=     180.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.46 ELREA=       84.46

   321.00    17.47    76.93      .00      .00    77.05      .12      .00      .00    84.46
    4100.       0.    4100.       0.       0.    1484.       0.       9.       1.    84.46
      .03      .00     2.76      .00     .030     .030     .030     .000    59.46   940.06
  .000119      25.      25.      25.        0        0        0      .00   119.88  1059.94
0
1
  12-05-89     10:27:15                                                                                PAGE    9


    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN       SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID      ENDST


 *SECNO 326.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.46 ELREA=       83.46

         5.1' GROUTED ROCK DROP STRUCTURE
   326.00    12.23    76.79      .00      .00    77.11      .31      .00      .06    83.46
    4100.       0.    4100.       0.       0.     911.       0.       9.       1.    83.46
      .03      .00     4.50      .00     .030     .030     .030     .000    64.56   950.53
 CCHV=    .100 CEHV=    .300
 *SECNO 350.900

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.48 ELREA=       83.48

    350.90    12.22    76.80      .00      .00    77.12      .32      .01      .00    83.48
     4100.       0.    4100.       0.       0.     910.       0.      10.       1.    83.48
       .03      .00     4.51      .00     .029     .029     .029     .000    64.58   950.56
   .000433      25.      25.      25.        0        0        0      .00    98.88  1049.44
0
 *SECNO 351.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.48 ELREA=       83.48

    351.00    12.22    76.80      .00      .00    77.12      .31      .00      .00    83.48
     4100.       0.    4100.       0.       0.     910.       0.      10.       1.    83.48
       .03      .00     4.50      .00     .029     .029     .029     .000    64.58   950.54
   .000432      15.       0.      15.        0        0        0      .00    98.91  1049.46
0
 *SECNO 485.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000
1
  12-05-89     10:27:15                                                                                  PAGE   10


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN     SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID    ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.56 ELREA=       83.56

    485.00    12.33    76.99      .00      .00    77.18      .19      .04      .01    83.56
     4100.       0.    4100.       0.       0.    1183.       0.      13.       1.    83.56
       .04      .00     3.47      .00     .029     .029     .029     .000    64.66   935.17
   .000255     134.     134.     134.        2        0        0      .00   129.66  1064.83
0
 CCHV=    .100 CEHV=    .300
 *SECNO 750.000

 3470 ENCROACHMENT STATIONS=     915.0    1085.0  TYPE=     1  TARGET=     170.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.72 ELREA=       83.72

    750.00    12.25    77.07      .00      .00    77.26      .19      .08      .00    83.72
     4100.       0.    4100.       0.       0.    1161.       0.      20.       2.    83.72
       .06      .00     3.53      .00     .035     .035     .035     .000    64.82   935.49
   .000392     245.     265.     285.        1        0        0      .00   129.01  1064.51
0
 *SECNO 850.000

 3470 ENCROACHMENT STATIONS=     922.2    1077.8  TYPE=     1  TARGET=     155.600

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.78 ELREA=       83.78

          BEGIN CONCRETE LINING
    850.00    12.15    77.03      .00      .00    77.35      .32      .05      .04    83.78
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     .000645      92.     100.     108.        2         0         0      .00    98.59  1049.29
  0
   CCHV=    .300 CEHV=    .500
   *SECNO 850.100

   3470 ENCROACHMENT STATIONS=     922.2    1077.8  TYPE=     1  TARGET=     155.600

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       83.78 ELREA=       83.78

      850.10    12.14    77.02      .00      .00    77.36      .34      .00      .01    83.78
       4100.       0.    4100.       0.       0.     873.       0.      23.       2. 100000.00
         .07      .00     4.69      .00     .015     .015     .015     .000    64.88   951.08
     .000130      15.       0.      15.        1         0         0      .00    97.84  1048.92
  0
  1
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      SECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS    BANK ELEV
      Q         QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
      TIME      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
      SLOPE     XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


   *SECNO 978.530

   3470 ENCROACHMENT STATIONS=     938.2    1061.8  TYPE=     1  TARGET=     123.700

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.04 ELREA=       84.04

      978.53    11.73    76.87      .00      .00    77.55      .68      .02      .17    84.04
       4100.       0.    4100.       0.       0.     619.       0.      25.       2. 100000.00
         .07      .00     6.62      .00     .015     .015     .015     .000    65.14   964.20
     .000283     129.     128.     129.        2         0         0      .00    71.61  1035.80
  0
   *SECNO 978.620

   3470 ENCROACHMENT STATIONS=     953.2    1046.8  TYPE=     1  TARGET=      93.700

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.04 ELREA=       84.04

      978.62    11.73    76.87      .00      .00    77.55      .68      .00      .00    84.04
       4100.       0.    4100.       0.       0.     619.       0.      25.       2. 100000.00
         .07      .00     6.62      .00     .015     .015     .015     .000    65.14   964.19
     .000283      15.       0.      15.        0         0         0      .00    71.61  1035.81
  0
   *SECNO 1027.300

   3470 ENCROACHMENT STATIONS=     953.2    1046.8  TYPE=     1  TARGET=      93.700

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.14 ELREA=       84.14

     1027.30    11.64    76.88      .00      .00    77.57      .69      .01      .01    84.14
       4100.       0.    4100.       0.       0.     613.       0.      26.       3. 100000.00
         .07      .00     6.69      .00     .015     .015     .015     .000    65.24   964.33
     .000291      38.      49.      59.        0         0         0      .00    71.34  1035.67
  0
   *SECNO 1042.000

   3470 ENCROACHMENT STATIONS=     967.3    1032.7  TYPE=     1  TARGET=      65.340

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.17 ELREA=       84.17

     1042.00    11.45    76.72      .00      .00    77.74     1.02      .01      .16    84.17
   .000428      15.      15.      15.        2        0        0      .00    53.87  1026.93
0
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST


 *SECNO 1042.100

 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.43 ELREA=       85.25

          WOOSTER AVENUE BRIDGE
   1042.10    11.46    76.73      .00      .00    77.74     1.01      .00      .00    85.43
     4100.       0.    4100.       0.       0.     508.       0.      26.       3. 100000.00
       .07      .00     8.07      .00     .015     .015     .015     .000    65.27    972.97
   .000426       4.       0.       3.        0        0        0      .00    54.06  1027.03
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
      1.05      1.56      2.70     57.00     37.00      2.67    994.29       .75     65.27     65.27

 *SECNO 1079.800
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=      76.57 BRIDGE VELOCITY=,      8.48      CALCULATED CHANNEL AREA=,      484.

  EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD
                                                                 AREA
       .00     77.89       .17        0.     4100.      994.     1000.      85.48     86.92



 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.45 ELREA=       85.30

   1079.80    11.54    76.89      .00      .00    77.89      .99      .15      .00    85.44
     4100.       0.    4100.       0.       0.     513.       0.      26.       3. 100000.00
       .08      .00     7.99      .00     .000     .015     .000     .000    65.35    972.90
   .000415      38.      38.      38.        0        0        0      .00    54.20  1027.10
0
 *SECNO 1079.900

 3470 ENCROACHMENT STATIONS=     937.0    1070.0  TYPE=     1  TARGET=     133.000
1
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    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
   1079.90    11.54    76.89      .00      .00    77.89     1.00      .00      .00    84.20
     4100.       0.    4100.       0.       0.     512.       0.      26.       3.     84.20
       .08      .00     8.01      .00     .015     .015     .015     .000    65.35   972.97
   .000416       3.       0.       3.        0        0        0      .00    54.06  1027.03
0
 CCHV=    .100 CEHV=    .300
 *SECNO 1110.000

 3470 ENCROACHMENT STATIONS=     937.0    1070.0  TYPE=     1  TARGET=     133.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.31 ELREA=       84.31

   1110.00    11.86    77.27      .00      .00    77.93      .66      .01      .03    84.31
     4100.       0.    4100.       0.       0.     627.       0.      27.       3.     84.31
       .08      .00     6.53      .00     .015     .015     .015     .000    65.41   964.00
   .000273      35.      30.      35.        2        0        0      .00    71.82  1035.82
0
 CCHV=    .300 CEHV=    .500
 *SECNO 1262.900
   1262.90    11.57    77.29      .00      .00    78.00      .71      .04      .02    84.62
     4100.       0.    4100.       0.       0.     607.       0.      29.       3.     84.62
       .08      .00     6.76      .00     .015     .015     .015     .000    65.72   964.45
   .000300     153.     153.     153.        2        0        0      .00    70.93  1035.37
0
 *SECNO 1338.100
   1338.10    11.43    77.30      .00      .00    78.03      .73      .02      .01    84.77
     4100.       0.    4100.       0.       0.     598.       0.      30.       3.     84.77
       .09      .00     6.86      .00     .015     .015     .015     .000    65.87   964.64
   .000313      75.      75.      75.        0        0        0      .00    70.54  1035.18
0
 *SECNO 1363.000

 3470 ENCROACHMENT STATIONS=     969.5    1030.5  TYPE=     1  TARGET=      61.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.82 ELREA=       84.82

1
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         WESTERN PACIFIC RAILROAD BRIDGE
   1363.00    11.25    77.17      .00      .00    78.19     1.02      .01      .14    84.82
     4100.       0.    4100.       0.       0.     506.       0.      30.       3. 100000.00
       .09      .00     8.11      .00     .015     .015     .015     .000    65.92   972.30
   .000437      39.      25.      21.        2        0        0      .00    55.41  1027.70
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR      COFQ      RDLEN      BWC       BWP       BAREA      SS        ELCHU      ELCHD
       1.05      1.56      2.70     73.00     45.00      5.33   1212.84      1.00      65.92      65.92

 *SECNO 1383.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     76.98 BRIDGE VELOCITY=,      7.30      CALCULATED CHANNEL AREA=,      561.

  EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
       .00     78.32      .28        0.     4100.     1213.     1153.     85.41     88.66
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      84.86 ELREA=      84.86

   1383.00    11.48    77.44      .00      .00    78.32      .87      .13      .00    84.86
    4100.       0.    4100.       0.       0.     547.       0.      30.       3. 100000.00
      .09      .00     7.50      .00     .000     .015     .000     .000    65.96    972.09
   .000357      20.      20.      20.        0        0        0      .00    56.68   1028.77
0
 *SECNO 1400.000

 3470 ENCROACHMENT STATIONS=     970.0    1020.0  TYPE=     1  TARGET=      50.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      84.87 ELREA=      84.89

   1400.00    11.24    77.23      .00      .00    78.55     1.32      .01      .23    84.87
    4100.       0.    4100.       0.       0.     444.       0.      31.       3. 100000.00
      .09      .00     9.24      .00     .015     .015     .015     .000    65.99    972.91
   .000606       3.      17.      23.        2        0        0      .00    46.05   1018.96
0
 CCHV=    .100 CEHV=    .300
 *SECNO 1481.000
1
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    SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA    LEFT/RIGHT
    TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     923.5    1047.5  TYPE=     1  TARGET=     124.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      85.05 ELREA=      85.05

   1481.00    11.77    77.92      .00      .00    78.65      .73      .03      .06    85.05
    4100.       0.    4100.       0.       0.     599.       0.      31.       3.     85.05
      .09      .00     6.84      .00     .015     .015     .015     .000    66.15    965.12
   .000306      87.      81.      80.        2        0        0      .00    69.75   1034.88
0
 CCHV=    .300 CEHV=    .500
 *SECNO 1788.000
   1788.00    11.21    77.97      .00      .00    78.80      .83      .10      .05    85.66
    4100.       0.    4100.       0.       0.     560.       0.      36.       4.     85.66
      .10      .00     7.32      .00     .015     .015     .015     .000    66.76    966.00
   .000369     307.     307.     307.        2        0        0      .00    68.00   1034.00
0
 *SECNO 1834.000

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     966.0    1034.0  TYPE=     1  TARGET=      68.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=      84.00 ELREA=      84.00

   1834.00     8.50    77.62      .00      .00    79.20     1.58      .03      .38    84.00
    4100.       0.    4100.       0.       0.     406.       0.      36.       4. 100000.00
      .10      .00    10.10      .00     .015     .015     .015     .000    69.12    969.76
   .000916      56.      46.      36.        2        0        0      .00    60.49   1030.24
 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       84.42 ELREA=       84.42

1
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          U.S. HIGHWAY 101 BRIDGE
   1869.50     8.49    77.71      .00       .00    79.25     1.53      .03       .02    84.42
     4100.       0.    4100.       0.        0.     413.       0.      36.        4. 100000.00
       .11      .00     9.94      .00      .015     .015     .015     .000     69.22   972.44
   .000830      32.      36.      42.         2        0        0      .00     55.12  1027.56
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK        XKOR       COFQ       RDLEN      BWC        BWP       BAREA      SS         ELCHU      ELCHD
         .90     1.56       2.70      57.00      42.00       2.33    890.00        .75      69.22      69.22

 *SECNO 2027.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     77.39 BRIDGE VELOCITY=,     10.96      CALCULATED CHANNEL AREA=,      374.

  EGPRS      EGLWC       H3       QWEIR      QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
        .00      79.60       .28        0.      4100.      890.      942.      87.00      88.20



 3470 ENCROACHMENT STATIONS=     971.5    1028.5  TYPE=     1  TARGET=      57.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.56 ELREA=       87.56

   2027.00     8.34    78.00      .00       .00    79.60     1.61      .35       .00    87.56
     4100.       0.    4100.       0.        0.     403.       0.      38.        4. 100000.00
       .11      .00    10.18      .00      .000     .015     .000     .000     69.66   972.56
   .000888     158.     158.     158.         0        0        0      .00     54.68  1027.24
0
 *SECNO 2057.000

 3470 ENCROACHMENT STATIONS=     966.0    1034.0  TYPE=     1  TARGET=      68.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.25 ELREA=       85.25

   2057.00     8.21    77.96      .00       .00    79.69     1.73      .03       .06    85.25
     4100.       0.    4100.       0.        0.     389.       0.      38.        4. 100000.00
       .11      .00    10.55      .00      .015     .015     .015     .000     69.75   970.18
   .001036      31.      30.      31.         2        0        0      .00     59.63  1029.81
0
 CCHV=    .100 CEHV=    .300
 *SECNO 2119.000

 3470 ENCROACHMENT STATIONS=     957.8    1042.3  TYPE=     1  TARGET=      84.500
1
  12-05-89     10:27:15                                                                                  PAGE  17


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS     BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA     LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.31 ELREA=       86.31

   2119.00     8.02    77.83      .00      .00    79.85     2.02      .07      .09    86.31
    4100.       0.     4100.       0.       0.     360.       0.      39.       4. 100000.00
      .11      .00    11.40      .00     .015     .015     .015     .000    69.81   970.86
   .001289      65.      62.      63.        2        0        0      .00    58.28  1029.14
0
 *SECNO 2499.000
   2499.00     8.28    78.47      .00      .00    80.33     1.86      .46      .02    86.69
    4100.       0.     4100.       0.       0.     375.       0.      42.       5.     86.69
      .12      .00    10.93      .00     .015     .015     .015     .000    70.19   970.46
   .001145     380.     380.     380.        2        0        0      .00    59.09  1029.54
0
 CCHV=    .100 CEHV=    .300
 *SECNO 2621.400

 3301 HV CHANGED MORE THAN HVINS


 3470 ENCROACHMENT STATIONS=     937.0    1063.0  TYPE=     1  TARGET=     126.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.81 ELREA=       86.81

         END CONCRETE LINING, BEGIN EARTH CHANNEL
   2621.40     9.87    80.18      .00      .00    80.60      .42      .13      .14    86.81
    4100.       0.     4100.       0.       0.     787.       0.      44.       5. 100000.00
      .13      .00     5.21      .00     .035     .035     .035     .000    70.31   950.26
   .001015     128.     122.     119.        3        0        0      .00    99.48  1049.74
0
 *SECNO 2646.400

 3470 ENCROACHMENT STATIONS=     937.0    1063.0  TYPE=     1  TARGET=     126.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.82 ELREA=       86.82

   2646.40     9.89    80.21      .00      .00    80.63      .42      .03      .00    86.82
    4100.       0.     4100.       0.       0.     789.       0.      44.       5. 100000.00
      .13      .00     5.20      .00     .035     .035     .035     .000    70.32   950.22
   .001008      22.      25.      28.        0        0        0      .00    99.55  1049.78
0
1
  12-05-89     10:27:15                                                                          PAGE   18


    SECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q         QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE     XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 CCHV=    .100 CEHV=    .300
 *SECNO 2646.500

 3470 ENCROACHMENT STATIONS=     922.0    1063.0  TYPE=     1  TARGET=     141.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.82 ELREA=       86.82

   2646.50     9.89    80.21      .00      .00    80.63      .42      .00      .00    86.82
    4100.       0.     4100.       0.       0.     789.       0.      44.       5. 100000.00
      .13      .00     5.19      .00     .025     .025     .025     .000    70.32   950.21
   .000513      15.       0.       0.        0        0        0      .00    99.58  1049.79
0
```

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 3470 ENCROACHMENT STATIONS=     922.0    1063.0  TYPE=     1  TARGET=     141.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.89 ELREA=       86.89

   2775.00      9.97     80.36       .00       .00     80.70       .33       .06       .01     86.89
     4100.        0.     4100.        0.        0.      887.        0.       46.        5. 100000.00
       .14       .00      4.62       .00      .025      .025      .025      .000     70.39    935.05
   .000418      112.      129.      145.         2         0         0       .00    114.90   1049.95
0
 *SECNO 2917.100
         OPPOSITE NORTH 33RD STREET & MELODY LANE
   2917.10      9.96     80.42       .00       .00     80.76       .33       .06       .00     86.96
     4100.        0.     4100.        0.        0.      887.        0.       49.        6.     86.96
       .15       .00      4.62       .00      .025      .025      .025      .000     70.46    935.06
   .000419      124.      142.      161.         0         0         0       .00    114.88   1049.94
0
 *SECNO 3000.000
   3000.00      9.96     80.46       .00       .00     80.79       .33       .03       .00     87.00
     4100.        0.     4100.        0.        0.      885.        0.       51.        6.     87.00
       .15       .00      4.63       .00      .025      .025      .025      .000     70.50    935.08
   .000421       83.       83.       83.         0         0         0       .00    114.83   1049.92
0
 *SECNO 3000.100

 3470 ENCROACHMENT STATIONS=     922.0    1078.0  TYPE=     1  TARGET=     156.000
1
  12-05-89     10:27:15                                                                            PAGE   19


    SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
    Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
    TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
    SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.99 ELREA=       86.99

   3000.10      9.97     80.46       .00       .00     80.79       .33       .00       .00     86.99
     4100.        0.     4100.        0.        0.      887.        0.       51.        6. 100000.00
       .15       .00      4.62       .00      .025      .025      .025      .000     70.49    935.06
   .000419        0.        0.       15.         0         0         0       .00    114.88   1049.94
0
 *SECNO 3048.400

 3470 ENCROACHMENT STATIONS=     922.0    1074.0  TYPE=     1  TARGET=     152.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.02 ELREA=       87.02

   3048.40     10.00     80.52       .00       .00     80.82       .29       .02       .00     87.02
     4100.        0.     4100.        0.        0.      947.        0.       52.        6. 100000.00
       .15       .00      4.33       .00      .025      .025      .025      .000     70.52    934.99
   .000394       48.       48.       48.         2         0         0       .00    130.02   1065.01
0
 *SECNO 3100.000

 3470 ENCROACHMENT STATIONS=     922.0    1074.0  TYPE=     1  TARGET=     152.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.05 ELREA=       87.05

   3100.00     10.02     80.57       .00       .00     80.84       .27       .02       .00     87.05
     4100.        0.     4100.        0.        0.      982.        0.       53.        6. 100000.00
       .16       .00      4.18       .00      .025      .025      .025      .000     70.55    934.97
   .000349       56.       52.       47.         2         0         0       .00    130.06   1065.03
   3300.00     9.98    80.63      .00      .00    80.91      .27      .07      .00    87.15
     4100.       0.    4100.       0.       0.     979.       0.      58.       7.    87.15
       .17      .00     4.19      .00     .025     .025     .025     .000    70.65   935.02
   .000353     217.     200.     183.        0        0        0      .00   129.96  1064.98
0
 *SECNO 3300.100

 3470 ENCROACHMENT STATIONS=     926.0    1074.0  TYPE=     1  TARGET=     148.000
1
  12-05-89     10:27:15                                                                          PAGE   20


    SECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q         QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE     XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.15 ELREA=       87.15

   3300.10     9.98    80.63      .00      .00    80.91      .27      .00      .00    87.15
     4100.       0.    4100.       0.       0.     978.       0.      58.       7. 100000.00
       .17      .00     4.19      .00     .025     .025     .025     .000    70.65   935.03
   .000354       4.       0.       0.        0        0        0      .00   129.94  1064.97
0
 *SECNO 3330.500
   3330.50     9.97    80.64      .00      .00    80.92      .27      .01      .00    87.17
     4100.       0.    4100.       0.       0.     977.       0.      58.       7.    87.17
       .17      .00     4.20      .00     .025     .025     .025     .000    70.67   935.05
   .000355      33.      30.      28.        0        0        0      .00   129.90  1064.95
0
 *SECNO 3662.900
   3662.90     9.92    80.76      .00      .00    81.04      .28      .12      .00    87.34
     4100.       0.    4100.       0.       0.     970.       0.      66.       8.    87.34
       .19      .00     4.23      .00     .025     .025     .025     .000    70.84   935.16
   .000363     332.     332.     332.        0        0        0      .00   129.69  1064.84
0
 *SECNO 3762.900

 3470 ENCROACHMENT STATIONS=     926.0    1074.0  TYPE=     1  TARGET=     148.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.38 ELREA=       87.38

   3762.90     9.82    80.70      .00      .00    81.13      .43      .04      .04    87.38
     4100.       0.    4100.       0.       0.     782.       0.      68.       8. 100000.00
       .20      .00     5.24      .00     .025     .025     .025     .000    70.88   950.36
   .000527     100.     100.     100.        2        0        0      .00    99.28  1049.64
0
 CCHV=    .100 CEHV=    .300
 *SECNO 3763.000

 3470 ENCROACHMENT STATIONS=     926.0    1074.0  TYPE=     1  TARGET=     148.000

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.38 ELREA=       87.38

   3763.00     9.82    80.70      .00      .00    81.13      .43      .00      .00    87.38
     4100.       0.    4100.       0.       0.     782.       0.      68.       8. 100000.00
       .20      .00     5.24      .00     .035     .035     .035     .000    70.88   950.36
   .001034       0.       0.       0.        0        0        0      .00    99.28  1049.64
0
1
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     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


   *SECNO 3788.000
    3788.00     9.84    80.73      .00      .00    81.15      .43      .03      .00    87.39
      4100.       0.    4100.       0.       0.     783.       0.      68.       8.    87.39
        .20      .00     5.24      .00     .035     .035     .035     .000    70.89   950.34
    .001030      25.      25.      25.        0        0        0      .00    99.32  1049.66
 0
   CCHV=    .300 CEHV=    .500
   *SECNO 3788.100

   3470 ENCROACHMENT STATIONS=     942.0    1058.0  TYPE=     1  TARGET=     116.000

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.39 ELREA=       87.39

    3788.10     9.82    80.71      .00      .00    81.17      .46      .00      .02    87.39
      4100.       0.    4100.       0.       0.     754.       0.      68.       8. 100000.00
        .20      .00     5.44      .00     .015     .015     .015     .000    70.89   950.68
    .000211      16.       0.      16.        2        0        0      .00    98.65  1049.32
 0
   *SECNO 3838.000

   3301 HV CHANGED MORE THAN HVINS


   3470 ENCROACHMENT STATIONS=     977.0    1023.0  TYPE=     1  TARGET=      46.000

   3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       87.44 ELREA=       87.44

          BEGIN CONCRETE U-FRAME CHANNEL
    3838.00     9.26    80.20      .00      .00    81.72     1.52      .02      .53    87.44
      4100.       0.    4100.       0.       0.     414.       0.      69.       8. 100000.00
        .20      .00     9.89      .00     .015     .015     .015     .000    70.94   977.00
    .000818      61.      50.      61.        2        0        0      .00    45.99  1022.99
 0
   *SECNO 4115.000
          CONFLUENCE WITH MIGUELITA CREEK (78" CMP)
    4115.00     9.20    80.42      .00      .00    81.96     1.54      .23      .01    87.72
      4100.       0.    4100.       0.       0.     411.       0.      72.       9.    87.72
        .21      .00     9.97      .00     .015     .015     .015     .000    71.22   977.00
    .000836     295.     277.     259.        2        0        0      .00    45.99  1023.00
 0
 1
   12-05-89     10:27:15                                                                      PAGE   22


     SECNO    DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
     Q        QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
     TIME     VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
     SLOPE    XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


   CCHV=    .100 CEHV=    .300
   *SECNO 4338.500
    4338.50     9.16    80.60      .00      .00    82.15     1.55      .19      .00    87.94
      4100.       0.    4100.       0.       0.     410.       0.      74.       9.    87.94
        .22      .00    10.01      .00     .015     .015     .015     .000    71.44   977.00
    .000846     238.     224.     209.        0        0        0      .00    45.99  1023.00
 0
   *SECNO 5109.800
    5109.80     9.02    81.23      .00      .00    82.83     1.60      .67      .01    88.71
   .000884     771.     771.     771.        1        0        0      .00    45.99  1023.00
 0
  *SECNO 5178.000

  3470 ENCROACHMENT STATIONS=     975.0    1025.0  TYPE=     1  TARGET=      50.000

  3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       89.00 ELREA=       89.00

    5178.00     8.13    81.24      .00      .00    82.92     1.68      .06      .02    89.00
      4100.       0.    4100.       0.       0.     394.       0.      82.      10. 100000.00
        .24      .00    10.41      .00     .015     .015     .015     .000    73.11   975.01
    .001006      69.      68.      70.        2        0        0      .00    49.99  1024.99
 0
  *SECNO 5236.000

  3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

  3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       89.00 ELREA=       89.00

         KING ROAD & MCKEE ROAD BOX CULVERT
    5236.00     7.81    81.02      .00      .00    83.11     2.08      .07      .12    89.00
      4100.       0.    4100.       0.       0.     354.       0.      82.      10. 100000.00
        .24      .00    11.58      .00     .015     .015     .015     .000    73.21   975.34
    .001321      50.      58.      88.        2        0        0      .00    46.66  1021.99
 0
  CCHV=    .300 CEHV=    .500
  *SECNO 5236.100
 1
   12-05-89     10:27:15                                                                            PAGE   23


     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS    BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA    LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST



  3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

  3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.70 ELREA=       85.70

    5236.10     7.81    81.02      .00      .00    83.11     2.08      .00      .00    85.70
      4100.       0.    4100.       0.       0.     354.       0.      82.      10. 100000.00
        .24      .00    11.59      .00     .015     .015     .015     .000    73.21   975.33
    .001323       0.       0.       0.        0        0        0      .00    46.66  1022.00
 0

  SPECIAL BRIDGE

  5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
  SB  XK        XKOR      COFQ      RDLEN     BWC       BWP       BAREA     SS        ELCHU     ELCHD
        .00       .00       .01     46.67     46.67      1.67    572.24       .00     73.21     73.21

  *SECNO 5272.000
  CLASS A LOW FLOW

  3420 BRIDGE W.S.=     80.66 BRIDGE VELOCITY=,     12.23      CALCULATED CHANNEL AREA=,      335.

   EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
        .00     83.15       .00        0.     4100.      572.      565.      85.77     87.20
 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.77 ELREA=       85.77

   5272.00     7.74    81.02      .00      .00    83.15     2.12      .04      .00    85.77
    4100.       0.    4100.        0.       0.     351.       0.      82.      10. 100000.00
      .24      .00    11.69      .00     .000     .015     .000     .000    73.28   975.33
   .001360      36.      36.      36.        0        0        0      .00    46.66  1022.00
0

 SPECIAL BRIDGE

1
  12-05-89     10:27:15                                                                           PAGE   24


    SECNO     DEPTH    CWSEL    CRIWS    WSELK    EG       HV       HL       OLOSS   BANK ELEV
    Q         QLOB     QCH      QROB     ALOB     ACH      AROB     VOL      TWA   LEFT/RIGHT
    TIME      VLOB     VCH      VROB     XNL      XNCH     XNR      WTN      ELMIN      SSTA
    SLOPE     XLOBL    XLCH     XLOBR    ITRIAL   IDC      ICONT    CORAR    TOPWID     ENDST


 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
        .00        .00        .01      46.67      46.67       2.67     473.68        .00      73.28      73.28

 *SECNO 5278.000

 3301 HV CHANGED MORE THAN HVINS

 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     80.16 BRIDGE VELOCITY=,     13.55      CALCULATED CHANNEL AREA=,      303.

  EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD
                                                                 AREA
        .00      83.67       .00         0.     4100.      474.      553.      85.85     87.50



 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.85 ELREA=       82.90

   5278.00     7.73    81.02      .00      .00    83.67     2.65      .52      .00    85.85
    4100.       0.    4100.       0.       0.     314.       0.      82.      10. 100000.00
      .24      .00    13.05      .00     .000     .015     .000     .000    73.29   975.33
   .001959       6.       6.       6.        0        0        0      .00    46.66  1022.00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK         XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
        .90       1.30       2.70      46.67      46.67       2.67     473.68        .00      73.29      73.29

 *SECNO 5387.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     80.14 BRIDGE VELOCITY=,     13.60      CALCULATED CHANNEL AREA=,      301.

  EGPRS      EGLWC       H3       QWEIR      QLOW      BAREA   TRAPEZOID      ELLC      ELTRD
                                                                 AREA
        .00      84.30      1.02         0.     4100.      474.      558.      85.97     87.50
 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARBET=      46.670
1
  12-05-89     10:27:15                                                                                                  PAGE   25


     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST



 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.97 ELREA=       83.69

   5387.00      8.56     82.04       .00       .00     84.30      2.26       .63       .00     85.97
     4100.        0.     4100.        0.        0.      340.        0.       83.       10. 100000.00
       .24       .00     12.05       .00      .000      .015      .000      .000     73.48    975.33
   .001558      109.      109.      109.         0         0         0       .00     46.66   1022.00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK          XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
          .00        .00        .01      46.67      46.67       1.67     523.62        .00      73.48      73.48

 *SECNO 5393.000
 CLASS A LOW FLOW

 3420 BRIDGE W.S.=     81.82 BRIDGE VELOCITY=,      10.93      CALCULATED CHANNEL AREA=,       375.

  EGPRS      EGLWC       H3        QWEIR      QLOW       BAREA   TRAPEZOID      ELLC       ELTRD
                                                                    AREA
        .00     84.30       .00         0.     4100.      524.       563.      85.98      87.60



 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       85.98 ELREA=       85.98

   5393.00      8.55     82.04       .00       .00     84.30      2.26       .01       .00     85.98
     4100.        0.     4100.        0.        0.      340.        0.       83.       10. 100000.00
       .24       .00     12.07       .00      .000      .015      .000      .000     73.49    975.33
   .001565        6.        6.        6.         0         0         0       .00     46.66   1022.00
0

 SPECIAL BRIDGE

 5070,VARIABLE ELCHU OR ELCHD ON CARD SB NOT SPECIFIED
 SB  XK          XKOR       COFQ       RDLEN      BWC        BWP        BAREA      SS         ELCHU      ELCHD
          .00        .00        .01      46.67      46.67       1.67     523.62        .00      73.49      73.49

 *SECNO 5417.700
1
  12-05-89     10:27:15                                                                                                  PAGE   26


     SECNO     DEPTH     CWSEL     CRIWS     WSELK     EG        HV        HL        OLOSS   BANK ELEV
     Q         QLOB      QCH       QROB      ALOB      ACH       AROB      VOL       TWA   LEFT/RIGHT
     TIME      VLOB      VCH       VROB      XNL       XNCH      XNR       WTN       ELMIN       SSTA
     SLOPE     XLOBL     XLCH      XLOBR     ITRIAL    IDC       ICONT     CORAR     TOPWID      ENDST
 3420 BRIDGE W.S.=     81.82 BRIDGE VELOCITY=,     10.94      CALCULATED CHANNEL AREA=,      375.

  EGPRS      EGLWC       H3       QWEIR      QLOW       BAREA   TRAPEZOID      ELLC      ELTRD
                                                                  AREA
       .00     84.33       .00        0.     4100.      524.      564.       86.03     87.70



 3470 ENCROACHMENT STATIONS=     975.3    1022.0  TYPE=     1  TARGET=      46.670

 3495 OVERBANK AREA ASSUMED NON-EFFECTIVE,ELLEA=       86.03 ELREA=       86.03

   5417.70     8.50    82.04      .00       .00    84.33     2.29       .03       .00    86.03
     4100.       0.    4100.       0.        0.     337.       0.       83.       10. 100000.00
       .25      .00    12.15      .00      .000     .015     .000      .000     73.54   975.33
   .001597      25.      25.      25.         0        0        0       .00     46.66  1022.00
0
1
 PROFILE FOR STREAM  PRELIMINARY RUN #1



 PLOTTED POINTS (BY PRIORITY)-E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA


 ELEVATION    55.       60.       65.       70.       75.       80.       85.       90.       95.      100.
     SECNO   CUMDIS

     50.00     0.  C        I.         .         .         .   E     .        L.         .         .         .         .
              40.  C        I.         .         .         .   E     .        L.         .         .         .         .
              80.  C        I.         .         .         .   E     .        L.         .         .         .         .
             120.  C        I.         .         .         .   E     .        L.         .         .         .         .
             160.  C        I.         .         .         .   E     .        L.         .         .         .         .
             200.  C        I.         .         .         .   E     .        L.         .         .         .         .
             240.  C        I.         .         .         .   E     .        L.         .         .         .         .
    296.00   280.  C        I.         .         .         .   E     .        L.         .         .         .         .
    321.00   320.  C        I.         .         .         .   E     .        L.         .         .         .         .
    326.00   360.  C         .        I.         .         .   E     .      L  .         .         .         .         .
    350.90   400.  C         .        I.         .         .   E     .      L  .         .         .         .         .
    351.00   440.  C         .        I.         .         .   E     .      L  .         .         .         .         .
    485.00   480.  C         .        I.         .         .   E     .      L  .         .         .         .         .
             520.  C         .        I.         .         .   E     .      L  .         .         .         .         .
             560.  C         .        I.         .         .   E     .      L  .         .         .         .         .
             600.  C         .        I.         .         .   E     .      L  .         .         .         .         .
             640.  C         .         I         .         .   E     .      L  .         .         .         .         .
             680.  C         .         I         .         .   E     .      L  .         .         .         .         .
    750.00   720.  C         .         I         .         .   WE    .      L  .         .         .         .         .
             760.  C         .         I         .         .   WE    .      L  .         .         .         .         R
    850.00   800.  C         .         I         .         .   WE    .       L .         .         .         .         R
    850.10   840.  C         .         I         .         .   WE    .       L .         .         .         .         R
             880.  C         .         I         .         .   WE    .       L .         .         .         .         R
             920.  C         .         I         .         .   WE    .       L .         .         .         .         R
    978.53   960.  C         .         I         .         .   WE    .       L .         .         .         .         R
    978.62  1000.  C         .         I         .         .   WE    .       L .         .         .         .         R
   1027.30  1040.  C         .         I         .         .   WE    .       L .         .         .         .         R
   1042.00  1080.  C         .         .I        .         .  W E    .       L .         .         .         .         R
   1042.10  1120.  C         .         .I        .         .  W E    .         .L        .         .         .         R
   1079.80  1160.  C         .         .I        .         .   W E   .         .L        .         .         .         R
   1079.90  1200.  C         .         .I        .         .   W E   .       L .         .         .         .         .
   1110.00  1240.  C         .         .I        .         .    WE   .        L.         .         .         .         .
   1262.90  1280.  C         .         .I        .         .    WE   .        L.         .         .         .         .
   1338.10  1320.  C         .         . I       .         .    WE   .         L         .         .         .         .
   1363.00  1360.  C         .         . I       .         .   W E   .         L         .         .         .         R
   1383.00  1400.  C         .         . I       .         .    W E  .         L         .         .         .         R
```

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         1520.  C          .         . I       .         .     WE  .         L         .         .         .         .
         1560.  C          .         .  I      .         .     WE  .         L         .         .         .         .
         1600.  C          .         .  I      .         .     WE  .         .L        .         .         .         .
         1640.  C          .         .  I      .         .     WE  .         .L        .         .         .         .
         1680.  C          .         .  I      .         .     WE  .         .L        .         .         .         .
         1720.  C          .         .  I      .         .     W E .         .L        .         .         .         .
1788.00  1760.  C          .         .   I     .         .     W E .         .L        .         .         .         .
1834.00  1800.  C          .         .       I .         .    W  E .       L .         .         .         .         R
1869.50  1840.  C          .         .       I .         .    W   E.        L.         .         .         .         R
         1880.  C          .         .        I.         .     W  E.         L         .         .         .         R
         1920.  C          .         .        I.         .     W  E.         . L       .         .         .         R
         1960.  C          .         .        I.         .     W  E.         .   L     .         .         .         R
2027.00  2000.  C          .         .        I.         .     W  E.         .    L    .         .         .         R
2057.00  2040.  C          .         .         I         .     W  E.         .LM       .         .         .         R
2119.00  2080.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2120.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2160.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2200.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2240.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2280.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2320.  C          .         .         I         .     W   E         .  L      .         .         .         R
         2360.  C          .         .         I         .      W  E         .  L      .         .         .         R
         2400.  C          .         .         I         .      W  .E        .  L      .         .         .         R
         2440.  C          .         .         I         .      W  .E        .  L      .         .         .         R
2499.00  2480.  C          .         .         I         .      W  .E        .  L      .         .         .         .
         2520.  C          .         .         I         .       W .E        .  L      .         .         .         R
         2560.  C          .         .         .I        .        W.E        .   L     .         .         .         R
2621.40  2600.  C          .         .         .I        .         WE        .   L     .         .         .         R
2646.40  2640.  C          .         .         .I        .         WE        .   L     .         .         .         R
2646.50  2680.  C          .         .         .I        .         WE        .   L     .         .         .         R
         2720.  C          .         .         .I        .         .E        .   L     .         .         .         R
2775.00  2760.  C          .         .         .I        .         .E        .   L     .         .         .         R
         2800.  C          .         .         .I        .         .E        .   L     .         .         .         R
         2840.  C          .         .         .I        .         .E        .   L     .         .         .         R
2917.10  2880.  C          .         .         .I        .         .WE       .   L     .         .         .         .
         2920.  C          .         .         .I        .         .WE       .   L     .         .         .         .
3000.00  2960.  C          .         .         .I        .         .WE       .   L     .         .         .         .
3000.10  3000.  C          .         .         .I        .         .WE       .   L     .         .         .         R
3048.40  3040.  C          .         .         .I        .         .WE       .   L     .         .         .         R
3100.00  3080.  C          .         .         .I        .         .WE       .   L     .         .         .         R
         3120.  C          .         .         .I        .         .WE       .   L     .         .         .         R
         3160.  C          .         .         .I        .         .WE       .   L     .         .         .         R
         3200.  C          .         .         .I        .         .WE       .   L     .         .         .         R
         3240.  C          .         .         .I        .         .WE       .   L     .         .         .         R
3300.00  3280.  C          .         .         .I        .         .WE       .   L     .         .         .         .
3300.10  3320.  C          .         .         .I        .         .WE       .   L     .         .         .         R
3330.50  3360.  C          .         .         .I        .         .WE       .   L     .         .         .         .
         3400.  C          .         .         .I        .         .WE       .   L     .         .         .         .
         3440.  C          .         .         .I        .         .WE       .   L     .         .         .         .
         3480.  C          .         .         .I        .         .WE       .   L     .         .         .         .
         3520.  C          .         .         . I       .         .WE       .    L    .         .         .         .
         3560.  C          .         .         . I       .         .WE       .    L    .         .         .         .
         3600.  C          .         .         . I       .         .WE       .    L    .         .         .         .
3662.90  3640.  C          .         .         . I       .         . E       .    L    .         .         .         .
         3680.  C          .         .         . I       .         .WE       .    L    .         .         .         R
3762.90  3720.  C          .         .         . I       .         .WE       .    L    .         .         .         R
3763.00  3760.  C          .         .         . I       .         .WE       .    L    .         .         .         R
3788.00  3800.  C          .         .         . I       .         .WE       .    L    .         .         .         .
3788.10  3840.  C          .         .         . I       .         .WE       .    L    .         .         .         R
3838.00  3880.  C          .         .         . I       .         W  E      .    L    .         .         .         R
         3920.  C          .         .         . I       .         W   E     .    L    .         .         .         R
         3960.  C          .         .         . I       .         .W  E     .    L    .         .         .         R
         4000.  C          .         .         . I       .         .W  E     .    L    .         .         .         R
         4040.  C          .         .         . I       .         .W  E     .    L    .         .         .         R
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             4160.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
             4200.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
             4240.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
             4280.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
    4338.50  4320.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
             4360.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
             4400.  C         .         .         .  I      .         .W  E     .     L   .         .         .         .
             4440.  C         .         .         .  I      .         .W   E    .     L   .         .         .         .
             4480.  C         .         .         .  I      .         .W   E    .     L   .         .         .         .
             4520.  C         .         .         .  I      .         . W  E    .     L   .         .         .         .
             4560.  C         .         .         .  I      .         . W  E    .     L   .         .         .         .
             4600.  C         .         .         .  I      .         . W  E    .     L   .         .         .         .
             4640.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4680.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4720.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4760.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4800.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4840.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4880.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4920.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             4960.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             5000.  C         .         .         .   I     .         . W  E    .      L  .         .         .         .
             5040.  C         .         .         .   I     .         . W   E   .      L  .         .         .         .
    5109.80  5080.  C         .         .         .   I     .         . W   E   .      L  .         .         .         .
             5120.  C         .         .         .    I    .         . W   E   .       L .         .         .         R
    5178.00  5160.  C         .         .         .     I   .         . W   E   .       L .         .         .         R
    5236.00  5200.  C         .         .         .     I   .         . W   E   .       L .         .         .         R
    5236.10  5240.  C         .         .         .     I   .         . W   E   .L        .         .         .         R
    5272.00  5280.  C         .         .         .      I  .         . W   E   . L       .         .         .         R
    5278.00  5320.  C         .         .         .      I  .         . W   ME  . L       .         .         .         R
    5387.00  5360.  C         .         .         .      I  .         .   W  M E. L       .         .         .         R
    5393.00  5400.  C         .         .         .      I  .         .   W    E. L       .         .         .         R
    5417.70  5440.  C         .         .         .      I  .         .   W    E. L       .         .         .         R
1
  12-05-89      10:27:15                                                                                          PAGE   27



                                                                                     THIS RUN EXECUTED 12-05-89
*************************************************
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST


PRELIMINARY RUN #1

SUMMARY PRINTOUT


      SECNO      XLBEL      RBEL      ELMIN      SSTA      ENDST       Q        DEPTH      CWSEL      AREA      TOPWID       VCH       EG


      50.000     84.30      84.30     59.30     939.80    1060.20   4100.00     17.60      76.90    1499.52    120.40       2.73     77.0

     296.000     84.45      84.45     59.45     940.05    1059.95   4100.00     17.48      76.93    1484.68    119.91       2.76     77.0

     321.000     84.46      84.46     59.46     940.06    1059.94   4100.00     17.47      76.93    1483.78    119.88       2.76     77.0
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   350.900     83.48     83.48     64.58    950.56   1049.44   4100.00     12.22     76.80    909.67     98.88      4.51    77.1
   351.000     83.48     83.48     64.58    950.54   1049.46   4100.00     12.22     76.80    910.44     98.91      4.50    77.1
   485.000     83.56     83.56     64.66    935.17   1064.83   4100.00     12.33     76.99   1182.73    129.66      3.47    77.1
   750.000     83.72     83.72     64.82    935.49   1064.51   4100.00     12.25     77.07   1160.54    129.01      3.53    77.2
   850.000     83.78 100000.00     64.88    950.71   1049.29   4100.00     12.15     77.03    902.49     98.59      4.54    77.3
   850.100     83.78 100000.00     64.88    951.08   1048.92   4100.00     12.14     77.02    873.31     97.84      4.69    77.3
   978.530     84.04 100000.00     65.14    964.20   1035.80   4100.00     11.73     76.87    619.16     71.61      6.62    77.5
   978.620     84.04 100000.00     65.14    964.19   1035.81   4100.00     11.73     76.87    619.29     71.61      6.62    77.5
  1027.300     84.14 100000.00     65.24    964.33   1035.67   4100.00     11.64     76.88    613.00     71.34      6.69    77.5
  1042.000     84.17 100000.00     65.27    973.06   1026.93   4100.00     11.45     76.72    506.90     53.87      8.09    77.7
  1042.100     85.43 100000.00     65.27    972.97   1027.03   4100.00     11.46     76.73    507.96     54.06      8.07    77.7
  1079.800     85.44 100000.00     65.35    972.90   1027.10   4100.00     11.54     76.89    512.89     54.20      7.99    77.8
  1079.900     84.20     84.20     65.35    972.97   1027.03   4100.00     11.54     76.89    512.16     54.06      8.01    77.8
1
 12-05-89     10:27:15                                                                                                PAGE   28


     SECNO     XLBEL      RBEL     ELMIN      SSTA     ENDST         Q     DEPTH     CWSEL      AREA    TOPWID       VCH      EG


  1110.000     84.31     84.31     65.41    964.00   1035.82   4100.00     11.86     77.27    627.40     71.82      6.53    77.9
  1262.900     84.62     84.62     65.72    964.45   1035.37   4100.00     11.57     77.29    606.59     70.93      6.76    78.0
  1338.100     84.77     84.77     65.87    964.64   1035.18   4100.00     11.43     77.30    597.50     70.54      6.86    78.0
  1363.000     84.82 100000.00     65.92    972.30   1027.70   4100.00     11.25     77.17    505.74     55.41      8.11    78.1
  1383.000     84.86 100000.00     65.96    972.09   1028.77   4100.00     11.48     77.44    546.74     56.68      7.50    78.3
  1400.000     84.87 100000.00     65.99    972.91   1018.96   4100.00     11.24     77.23    443.89     46.05      9.24    78.5
  1481.000     85.05     85.05     66.15    965.12   1034.88   4100.00     11.77     77.92    599.41     69.75      6.84    78.6
  1788.000     85.66     85.66     66.76    966.00   1034.00   4100.00     11.21     77.97    560.29     68.00      7.32    78.8
  1834.000     84.00 100000.00     69.12    969.76   1030.24   4100.00      8.50     77.62    405.92     60.49     10.10    79.2
  1869.500     84.42 100000.00     69.22    972.44   1027.56   4100.00      8.49     77.71    412.52     55.12      9.94    79.2
  2027.000     87.56 100000.00     69.66    972.56   1027.24   4100.00      8.34     78.00    402.92     54.68     10.18    79.6
  2057.000     85.25 100000.00     69.75    970.18   1029.81   4100.00      8.21     77.96    398.67     59.63     10.55    79.6
  2119.000     86.31 100000.00     69.81    970.86   1029.14   4100.00      8.02     77.83    359.74     58.28     11.40    79.8
  2499.000     86.69     86.69     70.19    970.46   1029.54   4100.00      8.28     78.47    375.03     59.09     10.93    80.3
  2621.400     86.81 100000.00     70.31    950.26   1049.74   4100.00      9.87     80.18    787.11     99.48      5.21    80.6
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    2646.500     86.82 100000.00     70.32    950.21   1049.79   4100.00      9.89     80.21    789.42     99.58      5.19    80.6

    2775.000     86.89 100000.00     70.39    935.05   1049.95   4100.00      9.97     80.36    887.11    114.90      4.62    80.7

    2917.100     86.96     86.96     70.46    935.06   1049.94   4100.00      9.96     80.42    886.67    114.88      4.62    80.7

    3000.000     87.00     87.00     70.50    935.08   1049.92   4100.00      9.96     80.46    885.26    114.83      4.63    80.7

    3000.100     86.99 100000.00     70.49    935.06   1049.94   4100.00      9.97     80.46    886.58    114.88      4.62    80.7

    3048.400     87.02 100000.00     70.52    934.99   1065.01   4100.00     10.00     80.52    946.74    130.02      4.33    80.8

    3100.000     87.05 100000.00     70.55    934.97   1065.03   4100.00     10.02     80.57    982.02    130.06      4.18    80.8

    3300.000     87.15     87.15     70.65    935.02   1064.98   4100.00      9.98     80.63    978.68    129.96      4.19    80.9

    3300.100     87.15 100000.00     70.65    935.03   1064.97   4100.00      9.98     80.63    978.04    129.94      4.19    80.9

    3330.500     87.17     87.17     70.67    935.05   1064.95   4100.00      9.97     80.64    976.74    129.90      4.20    80.9

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  12-05-89     10:27:15                                                                                      PAGE   29


     SECNO      XLBEL      RBEL     ELMIN      SSTA     ENDST         Q     DEPTH     CWSEL      AREA    TOPWID       VCH      EG


    3662.900     87.34     87.34     70.84    935.16   1064.84   4100.00      9.92     80.76    969.90    129.69      4.23    81.0

    3762.900     87.38 100000.00     70.88    950.36   1049.64   4100.00      9.82     80.70    782.05     99.28      5.24    81.1

    3763.000     87.38 100000.00     70.88    950.36   1049.64   4100.00      9.82     80.70    782.05     99.28      5.24    81.1

    3788.000     87.39     87.39     70.89    950.34   1049.66   4100.00      9.84     80.73    783.00     99.32      5.24    81.1

    3788.100     87.39 100000.00     70.89    950.68   1049.32   4100.00      9.82     80.71    754.33     98.65      5.44    81.1

    3838.000     87.44 100000.00     70.94    977.00   1022.99   4100.00      9.26     80.20    414.45     45.99      9.89    81.7

    4115.000     87.72     87.72     71.22    977.00   1023.00   4100.00      9.20     80.42    411.39     45.99      9.97    81.9

    4338.500     87.94     87.94     71.44    977.00   1023.00   4100.00      9.16     80.60    409.77     45.99     10.01    82.1

    5109.800     88.71     88.71     72.21    977.00   1023.00   4100.00      9.02     81.23    403.61     45.99     10.16    82.8

    5178.000     89.00 100000.00     73.11    975.01   1024.99   4100.00      8.13     81.24    393.68     49.99     10.41    82.9

    5236.000     89.00 100000.00     73.21    975.34   1021.99   4100.00      7.81     81.02    354.04     46.66     11.58    83.1

    5236.100     85.70 100000.00     73.21    975.33   1022.00   4100.00      7.81     81.02    353.89     46.66     11.59    83.1

    5272.000     85.77 100000.00     73.28    975.33   1022.00   4100.00      7.74     81.02    350.60     46.66     11.69    83.1

    5278.000     85.85 100000.00     73.29    975.33   1022.00   4100.00      7.73     81.02    314.12     46.66     13.05    83.6

    5387.000     85.97 100000.00     73.48    975.33   1022.00   4100.00      8.56     82.04    340.13     46.66     12.05    84.3

    5393.000     85.98 100000.00     73.49    975.33   1022.00   4100.00      8.55     82.04    339.68     46.66     12.07    84.3

    5417.700     86.03 100000.00     73.54    975.33   1022.00   4100.00      8.50     82.04    337.36     46.66     12.15    84.3

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  12-05-89     10:27:15                                                                                      PAGE   30
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 SUMMARY OF ERRORS AND SPECIAL NOTES


1
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                                                                                  THIS RUN EXECUTED 12-05-89
###################################################
  HEC2 RELEASE DATED NOV 76 UPDATED MAY  1984
  ERROR CORR -  01,02,03,04,05,06
  MODIFICATION -  50,51,52,53,54,55,56
  IBM-PC-XT VERSION AUGUST 1985
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```
        ''WASP2''SUBCRITICAL WATER SURFACE PROFILE

                       LOWER SILVER CREEK


COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC6100.WSP
   CHECKED BY:________________      DATE:__________


STATION     Q        B       Z        Dc      DEPTH     AREA      VELOC     E.G.L      INV EL     W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft       cfs       ft               ft       ft       sq ft      fps       ft         ft         ft     BOARD    NUMBER   DEPTH

 0+50.00  6100.00   50.00   2.00    7.005   20.900   1918.6     3.18     80.36      59.30      80.20   25.11    0.15     1.25

Stream Power= 0.4050  n=0.046  So=0.000600  Sf=0.000306   Headloss Factor=0.000    Total Headloss=0.015 ft. Se=0.000305

 1+00.00  6100.00   50.00   2.00    7.005   20.885   1916.6     3.18     80.37      59.33      80.21   25.09    0.15     1.25

Stream Power= 0.4063  n=0.046  So=0.000600  Sf=0.000306   Headloss Factor=0.000    Total Headloss=0.015 ft. Se=0.000306

 1+50.00  6100.00   50.00   2.00    7.005   20.870   1914.6     3.19     80.39      59.36      80.23   25.08    0.15     1.26

Stream Power= 0.4080  n=0.046  So=0.000600  Sf=0.000307   Headloss Factor=0.000    Total Headloss=0.015 ft. Se=0.000307

 2+00.00  6100.00   50.00   2.00    7.005   20.855   1912.6     3.19     80.40      59.39      80.24   25.06    0.15     1.26

Stream Power= 0.4095  n=0.046  So=0.000600  Sf=0.000308   Headloss Factor=0.000    Total Headloss=0.015 ft. Se=0.000308

 2+50.00  6100.00   50.00   2.00    7.005   20.840   1910.6     3.19     80.42      59.42      80.26   25.04    0.15     1.26

Stream Power= 0.4107  n=0.046  So=0.000600  Sf=0.000309   Headloss Factor=0.000    Total Headloss=0.014 ft. Se=0.000309

 2+96.00  6100.00   50.00   2.00    7.005   20.826   1908.8     3.20     80.43      59.45      80.27   25.02    0.15     1.26

Stream Power= 0.2552  n=0.030  So=0.000600  Sf=0.000193   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000192

 3+00.00  6100.00   50.00   2.00    7.005   20.825   1908.6     3.20     80.43      59.45      80.27   25.02    0.15     1.26

Stream Power= 0.1726  n=0.030  So=0.000599  Sf=0.000132   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000130

 3+01.00  6100.00   50.00   2.00    7.005   20.824   1908.5     3.20     80.43      59.45      80.27   25.02    0.15     1.26

Stream Power= 0.1745  n=0.030  So=0.000600  Sf=0.000132   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000131

 3+06.00  6100.00   50.00   2.00    7.005   20.822   1908.2     3.20     80.43      59.45      80.28   25.02    0.15     1.26

Stream Power= 0.1734  n=0.030  So=0.000600  Sf=0.000132   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000130

 3+11.00  6100.00   50.00   2.00    7.005   20.819   1907.9     3.20     80.43      59.46      80.28   25.02    0.15     1.26

Stream Power= 0.1714  n=0.030  So=0.000600  Sf=0.000132   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000129

 3+16.00  6100.00   50.00   2.00    7.005   20.817   1907.5     3.20     80.44      59.46      80.28   25.01    0.15     1.26
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COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC6100.WSP
   CHECKED BY:_______________       DATE:_________

STATION      Q         B        Z        Dc       DEPTH      AREA      VELOC     E.G.L      INV EL     W.S.EL   SCS FREE  FROUDE   SEQUENT
  ft        cfs        ft                ft        ft        sq ft      fps       ft         ft         ft       BOARD    NUMBER    DEPTH


Stream Power= 0.1719  n=0.030  So=0.000080  Sf=0.000132   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000129

 3+21.00   6100.00   50.00     2.00     7.005   20.817    1907.6      3.20      80.44      59.46      80.28   25.01     0.15     1.26

Stream Power= 0.1942  n=0.030  So=1.020000  Sf=0.000146   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000146

 3+22.00   6100.00   50.00     2.00     7.005   19.772    1770.4      3.45      80.44      60.48      80.25   23.76     0.16     1.41

Stream Power= 0.2450  n=0.030  So=1.020000  Sf=0.000180   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000179

 3+23.00   6100.00   50.00     2.00     7.005   18.721    1637.0      3.73      80.44      61.50      80.22   22.51     0.18     1.58

Stream Power= 0.3176  n=0.030  So=1.020000  Sf=0.000224   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000224

 3+24.00   6100.00   50.00     2.00     7.005   17.662    1507.0      4.05      80.44      62.52      80.18   21.25     0.20     1.78

Stream Power= 0.4122  n=0.030  So=1.020000  Sf=0.000283   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000281

 3+25.00   6100.00   50.00     2.00     7.005   16.594    1380.4      4.42      80.44      63.54      80.13   19.97     0.23     2.01

Stream Power= 0.5555  n=0.030  So=1.019997  Sf=0.000364   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000365

 3+26.00   6100.00   50.00     2.00     7.005   15.511    1256.8      4.85      80.44      64.56      80.07   18.69     0.26     2.28

Stream Power= 0.6636  n=0.030  So=0.000601  Sf=0.000416   Headloss Factor=0.000    Total Headloss=0.002 ft. Se=0.000416

 3+31.00   6100.00   50.00     2.00     7.005   15.510    1256.7      4.85      80.44      64.56      80.07   18.69     0.26     2.28

Stream Power= 0.6642  n=0.030  So=0.000597  Sf=0.000416   Headloss Factor=0.000    Total Headloss=0.002 ft. Se=0.000417

 3+36.00   6100.00   50.00     2.00     7.005   15.509    1256.6      4.85      80.44      64.57      80.08   18.68     0.26     2.28

Stream Power= 0.6632  n=0.030  So=0.000603  Sf=0.000416   Headloss Factor=0.000    Total Headloss=0.002 ft. Se=0.000416

 3+41.00   6100.00   50.00     2.00     7.005   15.508    1256.5      4.85      80.44      64.57      80.08   18.68     0.26     2.28

Stream Power= 0.6641  n=0.030  So=0.000600  Sf=0.000416   Headloss Factor=0.000    Total Headloss=0.002 ft. Se=0.000416

 3+46.00   6100.00   50.00     2.00     7.005   15.507    1256.3      4.86      80.45      64.57      80.08   18.68     0.26     2.28

Stream Power= 0.6588  n=0.030  So=0.000597  Sf=0.000417   Headloss Factor=0.000    Total Headloss=0.002 ft. Se=0.000413

 3+50.00   6100.00   50.00     2.00     7.005   15.507    1256.3      4.86      80.45      64.57      80.08   18.68     0.26     2.28

Stream Power= 0.9686  n=0.046  So=0.000610  Sf=0.000610   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000607

 3+51.00   6100.00   50.00     2.00     7.005   15.507    1256.3      4.86      80.45      64.57      80.08   18.68     0.26     2.28
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COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC6100.WSP
   CHECKED BY:________________      DATE:_________

STATION      Q         B        Z        Dc      DEPTH     AREA      VELOC     E.G.L      INV EL     W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft        cfs        ft                ft       ft      sq ft      fps       ft         ft         ft     BOARD    NUMBER   DEPTH


Stream Power= 1.5582  n=0.046  So=0.000600  Sf=0.000977   Headloss Factor=0.000    Total Headloss=0.048 ft. Se=0.000977

 4+00.00   6100.00   50.00     2.00    7.005   15.526   1258.5      4.85     80.50      64.60     80.13   18.70     0.25     2.28

Stream Power= 1.5495  n=0.046  So=0.000600  Sf=0.000972   Headloss Factor=0.000    Total Headloss=0.049 ft. Se=0.000972

 4+50.00   6100.00   50.00     2.00    7.005   15.546   1260.7      4.84     80.54      64.63     80.18   18.73     0.25     2.27

Stream Power= 1.5420  n=0.046  So=0.000600  Sf=0.000968   Headloss Factor=0.000    Total Headloss=0.029 ft. Se=0.000968

 4+80.00   6100.00   50.00     2.00    7.005   15.558   1262.0      4.83     80.57      64.65     80.21   18.74     0.25     2.27
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      ''WASP2''SUPERCRITICAL WATER SURFACE PROFILE

                          LOWER SILVER CREEK


COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC16100.WSP
   CHECKED BY:________________     DATE:__________

STATION      Q        B        Z        Dc      DEPTH      AREA      VELOC      E.G.L       INV EL      W.S.EL   SCS FREE  FROUDE   SEQUENT
  ft        cfs       ft                ft       ft       sq ft       fps        ft          ft          ft      BOARD    NUMBER    DEPTH

 3+26.00   6100.00   50.00    2.00    7.005    7.005     448.4      13.60      74.44       64.56       71.57     8.76     1.00      7.01

Stream Power=26.3059  n=0.030  So=1.019997  Sf=0.011887   Headloss Factor=0.000    Total Headloss=0.012 ft. Se=0.011868

 3+25.00   6100.00   50.00    2.00    7.005    5.310     321.9      18.95      74.43       63.54       68.85     6.64     1.57      8.99

Stream Power=61.1594  n=0.030  So=1.020000  Sf=0.024349   Headloss Factor=0.000    Total Headloss=0.024 ft. Se=0.024329

 3+24.00   6100.00   50.00    2.00    7.005    4.791     285.4      21.37      74.40       62.52       67.31     5.99     1.85      9.74

Stream Power=86.7419  n=0.030  So=1.020000  Sf=0.033248   Headloss Factor=0.000    Total Headloss=0.033 ft. Se=0.033221

 3+23.00   6100.00   50.00    2.00    7.005    4.447     261.9      23.29      74.37       61.50       65.95     5.56     2.09     10.29

Stream Power=%112.3174  n=0.030  So=1.020000  Sf=0.041982   Headloss Factor=0.000    Total Headloss=0.042 ft. Se=0.041953

 3+22.00   6100.00   50.00    2.00    7.005    4.190     244.6      24.94      74.33       60.48       64.67     5.24     2.30     10.74

Stream Power=%138.4650  n=0.030  So=1.020000  Sf=0.050791   Headloss Factor=0.000    Total Headloss=0.051 ft. Se=0.050756

 3+21.00   6100.00   50.00    2.00    7.005    3.984     231.0      26.41      74.28       59.46       63.44     4.98     2.49     11.12

Stream Power=%152.7834  n=0.030  So=0.000080  Sf=0.054227   Headloss Factor=0.000    Total Headloss=0.271 ft. Se=0.054219

 3+16.00   6100.00   50.00    2.00    7.005    4.038     234.5      26.01      74.01       59.46       63.50     5.05     2.43     11.02

Stream Power=%145.4575  n=0.030  So=0.000600  Sf=0.051813   Headloss Factor=0.000    Total Headloss=0.259 ft. Se=0.051807

 3+11.00   6100.00   50.00    2.00    7.005    4.091     238.0      25.63      73.75       59.46       63.55     5.11     2.38     10.92

Stream Power=%138.5695  n=0.030  So=0.000600  Sf=0.049535   Headloss Factor=0.000    Total Headloss=0.248 ft. Se=0.049529

 3+06.00   6100.00   50.00    2.00    7.005    4.144     241.6      25.25      73.50       59.45       63.60     5.18     2.34     10.82

Stream Power=%132.0450  n=0.030  So=0.000600  Sf=0.047374   Headloss Factor=0.000    Total Headloss=0.237 ft. Se=0.047365

 3+01.00   6100.00   50.00    2.00    7.005    4.198     245.2      24.88      73.26       59.45       63.65     5.25     2.29     10.72

Stream Power=%127.6583  n=0.030  So=0.000599  Sf=0.046133   Headloss Factor=0.000    Total Headloss=0.046 ft. Se=0.046096

 3+00.00   6100.00   50.00    2.00    7.005    4.209     245.9      24.81      73.22       59.45       63.66     5.26     2.28     10.70
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COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC16100.WSP
   CHECKED BY:________________     DATE:__________


STATION      Q          B        Z        Dc      DEPTH      AREA      VELOC      E.G.L      INV EL     W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft        cfs        ft                 ft       ft       sq ft      fps        ft         ft         ft      BOARD    NUMBER   DEPTH


Stream Power=%183.0918  n=0.046  So=0.000600  Sf=0.065921   Headloss Factor=0.000    Total Headloss=0.264 ft. Se=0.065910

 2+96.00   6100.00    50.00     2.00     7.005    4.273     250.2     24.38     72.95      59.45     63.72    5.34     2.23   10.59

Stream Power=%188.2725  n=0.046  So=0.000600  Sf=0.063042   Headloss Factor=0.000    Total Headloss=2.900 ft. Se=0.063041

 2+50.00   6100.00    50.00     2.00     7.005    5.501     335.5     18.18     70.05      59.42     64.92    6.88     1.48    8.73
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      ''WASP2''SUBCRITICAL WATER SURFACE PROFILE

                     LOWER SILVER CREEK


COMPUTED BY:  GORDON LAU   DATE:   06-28-1989   DATA FILE: C:\WASP2\LSC.WSP    CHECKED BY:______________    DATE:_________

STATION     Q        B       Z       Dc      DEPTH     AREA      VELOC     E.G.L      INV EL     W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft       cfs       ft              ft       ft       sq ft      fps       ft         ft         ft     BOARD    NUMBER   DEPTH

 0+50.00  4100.00  50.00    2.00    5.492   16.700    1392.8     2.94     76.13      59.30      76.00   20.07     0.15     0.96

Stream Power= 0.1360  n=0.029  So=0.000600  Sf=0.000133   Headloss Factor=0.000    Total Headloss=0.007 ft. Se=0.000133

 1+00.00  4100.00  50.00    2.00    5.492   16.676    1390.0     2.95     76.14      59.33      76.01   20.04     0.15     0.97

Stream Power= 0.1369  n=0.029  So=0.000600  Sf=0.000133   Headloss Factor=0.000    Total Headloss=0.007 ft. Se=0.000133

 1+50.00  4100.00  50.00    2.00    5.492   16.652    1387.2     2.96     76.15      59.36      76.01   20.01     0.15     0.97

Stream Power= 0.1377  n=0.029  So=0.000600  Sf=0.000134   Headloss Factor=0.000    Total Headloss=0.007 ft. Se=0.000134

 2+00.00  4100.00  50.00    2.00    5.492   16.628    1384.4     2.96     76.15      59.39      76.02   19.98     0.15     0.97

Stream Power= 0.1386  n=0.029  So=0.000600  Sf=0.000135   Headloss Factor=0.000    Total Headloss=0.007 ft. Se=0.000135

 2+50.00  4100.00  50.00    2.00    5.492   16.605    1381.7     2.97     76.16      59.42      76.02   19.95     0.15     0.98

Stream Power= 0.1442  n=0.030  So=0.000600  Sf=0.000140   Headloss Factor=0.000    Total Headloss=0.006 ft. Se=0.000140

 2+96.00  4100.00  50.00    2.00    5.492   16.583    1379.1     2.97     76.17      59.45      76.03   19.93     0.15     0.98

Stream Power= 0.1486  n=0.030  So=0.000600  Sf=0.000145   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000144

 3+00.00  4100.00  50.00    2.00    5.492   16.581    1378.9     2.97     76.17      59.45      76.03   19.92     0.15     0.98

Stream Power= 0.1456  n=0.030  So=0.000599  Sf=0.000145   Headloss Factor=0.000    Total Headloss=0.000 ft. Se=0.000141

 3+01.00  4100.00  50.00    2.00    5.492   16.581    1378.9     2.97     76.17      59.45      76.03   19.92     0.15     0.98

Stream Power= 0.1495  n=0.030  So=0.000600  Sf=0.000145   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000145

 3+06.00  4100.00  50.00    2.00    5.492   16.578    1378.6     2.97     76.17      59.45      76.03   19.92     0.15     0.98

Stream Power= 0.1488  n=0.030  So=0.000600  Sf=0.000146   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000144

 3+11.00  4100.00  50.00    2.00    5.492   16.576    1378.3     2.97     76.17      59.46      76.03   19.92     0.15     0.98

Stream Power= 0.1490  n=0.030  So=0.000600  Sf=0.000146   Headloss Factor=0.000    Total Headloss=0.001 ft. Se=0.000145

 3+16.00  4100.00  50.00    2.00    5.492   16.574    1378.0     2.98     76.17      59.46      76.03   19.92     0.15     0.98
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COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC.WSP     CHECKED BY:________________     DATE:__________

STATION      Q          B          Z          Dc        DEPTH       AREA        VELOC      E.G.L       INV EL      W.S.EL   SCS FREE  FROUDE  SEQUENT
  ft        cfs         ft                    ft         ft         sq ft        fps        ft          ft          ft       BOARD    NUMBER   DEPTH

Stream Power= 0.1505  n=0.030  So=0.000080  Sf=0.000146   Headloss Factor=0.000   Total Headloss=0.001 ft. Se=0.000146

 3+21.00   4100.00   50.00    2.00    5.492   16.574   1378.1      2.98     76.17      59.46     76.03   19.92    0.15    0.98

Stream Power= 0.1704  n=0.030  So=1.020000  Sf=0.000165   Headloss Factor=0.000   Total Headloss=0.000 ft. Se=0.000166

 3+22.00   4100.00   50.00    2.00    5.492   15.527   1258.5      3.26     76.17      60.48     76.01   18.67    0.17    1.12

Stream Power= 0.2312  n=0.030  So=1.020000  Sf=0.000213   Headloss Factor=0.000   Total Headloss=0.000 ft. Se=0.000217

 3+23.00   4100.00   50.00    2.00    5.492   14.472   1142.5      3.59     76.17      61.50     75.97   17.41    0.19    1.29

Stream Power= 0.3100  n=0.030  So=1.020000  Sf=0.000282   Headloss Factor=0.000   Total Headloss=0.000 ft. Se=0.000280

 3+24.00   4100.00   50.00    2.00    5.492   13.406   1029.7      3.98     76.17      62.52     75.93   16.14    0.22    1.50

Stream Power= 0.4339  n=0.030  So=1.020000  Sf=0.000381   Headloss Factor=0.000   Total Headloss=0.000 ft. Se=0.000377

 3+25.00   4100.00   50.00    2.00    5.492   12.324    920.0      4.46     76.17      63.54     75.86   14.85    0.26    1.76

Stream Power= 0.6392  n=0.030  So=1.019997  Sf=0.000531   Headloss Factor=0.000   Total Headloss=0.001 ft. Se=0.000532

 3+26.00   4100.00   50.00    2.00    5.492   11.218    812.5      5.05     76.17      64.56     75.78   13.54    0.30    2.09

Stream Power= 0.8114  n=0.030  So=0.000601  Sf=0.000637   Headloss Factor=0.000   Total Headloss=0.003 ft. Se=0.000635

 3+31.00   4100.00   50.00    2.00    5.492   11.218    812.6      5.05     76.18      64.56     75.78   13.54    0.30    2.09

Stream Power= 0.8123  n=0.030  So=0.000597  Sf=0.000637   Headloss Factor=0.000   Total Headloss=0.003 ft. Se=0.000636

 3+36.00   4100.00   50.00    2.00    5.492   11.218    812.6      5.05     76.18      64.57     75.78   13.54    0.30    2.09

Stream Power= 0.8099  n=0.030  So=0.000603  Sf=0.000637   Headloss Factor=0.000   Total Headloss=0.003 ft. Se=0.000634

 3+41.00   4100.00   50.00    2.00    5.492   11.218    812.6      5.05     76.18      64.57     75.79   13.54    0.30    2.09

Stream Power= 0.8130  n=0.030  So=0.000600  Sf=0.000637   Headloss Factor=0.000   Total Headloss=0.003 ft. Se=0.000637

 3+46.00   4100.00   50.00    2.00    5.492   11.218    812.6      5.05     76.19      64.57     75.79   13.54    0.30    2.09

Stream Power= 0.8136  n=0.030  So=0.000597  Sf=0.000636   Headloss Factor=0.000   Total Headloss=0.003 ft. Se=0.000637

 3+50.00   4100.00   50.00    2.00    5.492   11.219    812.6      5.05     76.19      64.57     75.79   13.54    0.30    2.09

Stream Power= 0.7797  n=0.029  So=0.000610  Sf=0.000615   Headloss Factor=0.000   Total Headloss=0.001 ft. Se=0.000611

 3+51.00   4100.00   50.00    2.00    5.492   11.219    812.6      5.05     76.19      64.57     75.79   13.54    0.30    2.09
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COMPUTED BY:  GORDON LAU    DATE:   06-28-1989    DATA FILE: C:\WASP2\LSC.WSP     CHECKED BY:_______________     DATE:_________

STATION      Q         B        Z        Dc      DEPTH      AREA      VELOC     E.G.L      INV EL     W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft        cfs        ft                ft        ft       sq ft      fps        ft         ft         ft      BOARD    NUMBER   DEPTH


Stream Power= 0.7595  n=0.029  So=0.000600  Sf=0.000595   Headloss Factor=0.000    Total Headloss=0.029 ft. Se=0.000595

 4+00.00   4100.00   50.00    2.00    5.492   11.218     812.6      5.05     76.22      64.60     75.82   13.54     0.30     2.09

Stream Power= 0.7596  n=0.029  So=0.000600  Sf=0.000595   Headloss Factor=0.000    Total Headloss=0.030 ft. Se=0.000595

 4+50.00   4100.00   50.00    2.00    5.492   11.218     812.6      5.05     76.25      64.63     75.85   13.54     0.30     2.09

Stream Power= 0.7596  n=0.029  So=0.000600  Sf=0.000595   Headloss Factor=0.000    Total Headloss=0.018 ft. Se=0.000595

 4+80.00   4100.00   50.00    2.00    5.492   11.218     812.6      5.05     76.27      64.65     75.87   13.54     0.30     2.09
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''WASP2''SUPERCRITICAL WATER SURFACE PROFILE

                    LOWER SILVER CREEK


COMPUTED BY:  GORDON LAU    DATE:   12-27-1989    DATA FILE: LSC1.WSP     CHECKED BY:________________     DATE:__________

STATION      Q         B        Z        Dc      DEPTH     AREA      VELOC     E.G.L      INV EL     W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft        cfs        ft                ft       ft       sq ft      fps       ft          ft         ft     BOARD    NUMBER   DEPTH

 3+26.00  4100.00   50.00    2.00     5.492    5.492     334.9     12.24     72.38      64.56      70.05     6.87     1.00     5.49

Stream Power=21.0161  n=0.030  So=1.019997  Sf=0.013193   Headloss Factor=0.000   Total Headloss=0.013 ft. Se=0.013169

 3+25.00  4100.00   50.00    2.00     5.492    4.014     232.9     17.60     72.37      63.54      67.55     5.02     1.65     7.26

Stream Power=53.6063  n=0.030  So=1.020000  Sf=0.029471   Headloss Factor=0.000   Total Headloss=0.029 ft. Se=0.029452

 3+24.00  4100.00   50.00    2.00     5.492    3.579     204.6     20.04     72.34      62.52      66.10     4.58     1.98     7.93

Stream Power=78.3369  n=0.030  So=1.020000  Sf=0.041492   Headloss Factor=0.000   Total Headloss=0.041 ft. Se=0.041472

 3+23.00  4100.00   50.00    2.00     5.492    3.297     186.6     21.97     72.29      61.50      64.80     4.30     2.25     8.41

Stream Power=%103.3877  n=0.030  So=1.020000  Sf=0.053491   Headloss Factor=0.000   Total Headloss=0.053 ft. Se=0.053450

 3+22.00  4100.00   50.00    2.00     5.492    3.088     173.5     23.63     72.24      60.48      63.57     4.09     2.50     8.80

Stream Power=%129.2399  n=0.030  So=1.020000  Sf=0.065727   Headloss Factor=0.000   Total Headloss=0.066 ft. Se=0.065658

 3+21.00  4100.00   50.00    2.00     5.492    2.923     163.3     25.11     72.18      59.46      62.38     3.92     2.72     9.13

Stream Power=%142.8446  n=0.030  So=0.000080  Sf=0.069978   Headloss Factor=0.000   Total Headloss=0.350 ft. Se=0.069967

 3+16.00  4100.00   50.00    2.00     5.492    2.980     166.8     24.59     71.83      59.46      62.44     3.98     2.64     9.02

Stream Power=%133.3721  n=0.030  So=0.000600  Sf=0.065606   Headloss Factor=0.000   Total Headloss=0.328 ft. Se=0.065601

 3+11.00  4100.00   50.00    2.00     5.492    3.036     170.3     24.08     71.50      59.46      62.49     4.04     2.56     8.90

Stream Power=%124.6617  n=0.030  So=0.000600  Sf=0.061575   Headloss Factor=0.000   Total Headloss=0.308 ft. Se=0.061569

 3+06.00  4100.00   50.00    2.00     5.492    3.093     173.8     23.59     71.19      59.45      62.55     4.09     2.49     8.79

Stream Power=%116.6196  n=0.030  So=0.000600  Sf=0.057840   Headloss Factor=0.000   Total Headloss=0.289 ft. Se=0.057833

 3+01.00  4100.00   50.00    2.00     5.492    3.150     177.3     23.12     70.90      59.45      62.60     4.15     2.42     8.68

Stream Power=%111.2782  n=0.030  So=0.000599  Sf=0.055737   Headloss Factor=0.000   Total Headloss=0.056 ft. Se=0.055681

 3+00.00  4100.00   50.00    2.00     5.492    3.161     178.0     23.03     70.85      59.45      62.61     4.16     2.41     8.66
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COMPUTED BY:  GORDON LAU    DATE:   12-27-1989    DATA FILE: LSC1.WSP     CHECKED BY:________________     DATE:__________

STATION      Q        B        Z        Dc      DEPTH     AREA     VELOC     E.G.L      INV EL    W.S.EL  SCS FREE  FROUDE  SEQUENT
  ft        cfs       ft                ft       ft      sq ft      fps       ft         ft        ft      BOARD    NUMBER   DEPTH

Stream Power=%108.3048  n=0.030  So=0.000600  Sf=0.054042   Headloss Factor=0.000    Total Headloss=0.216 ft. Se=0.054040

 2+96.00   4100.00   50.00    2.00    5.492    3.207    180.9     22.66     70.63      59.45     62.65    4.21     2.35     8.58

Stream Power=80.9944  n=0.029  So=0.000600  Sf=0.038679   Headloss Factor=0.000    Total Headloss=1.779 ft. Se=0.038679

 2+50.00   4100.00   50.00    2.00    5.492    3.723    213.9     19.17     68.85      59.42     63.14    4.72     1.86     7.70

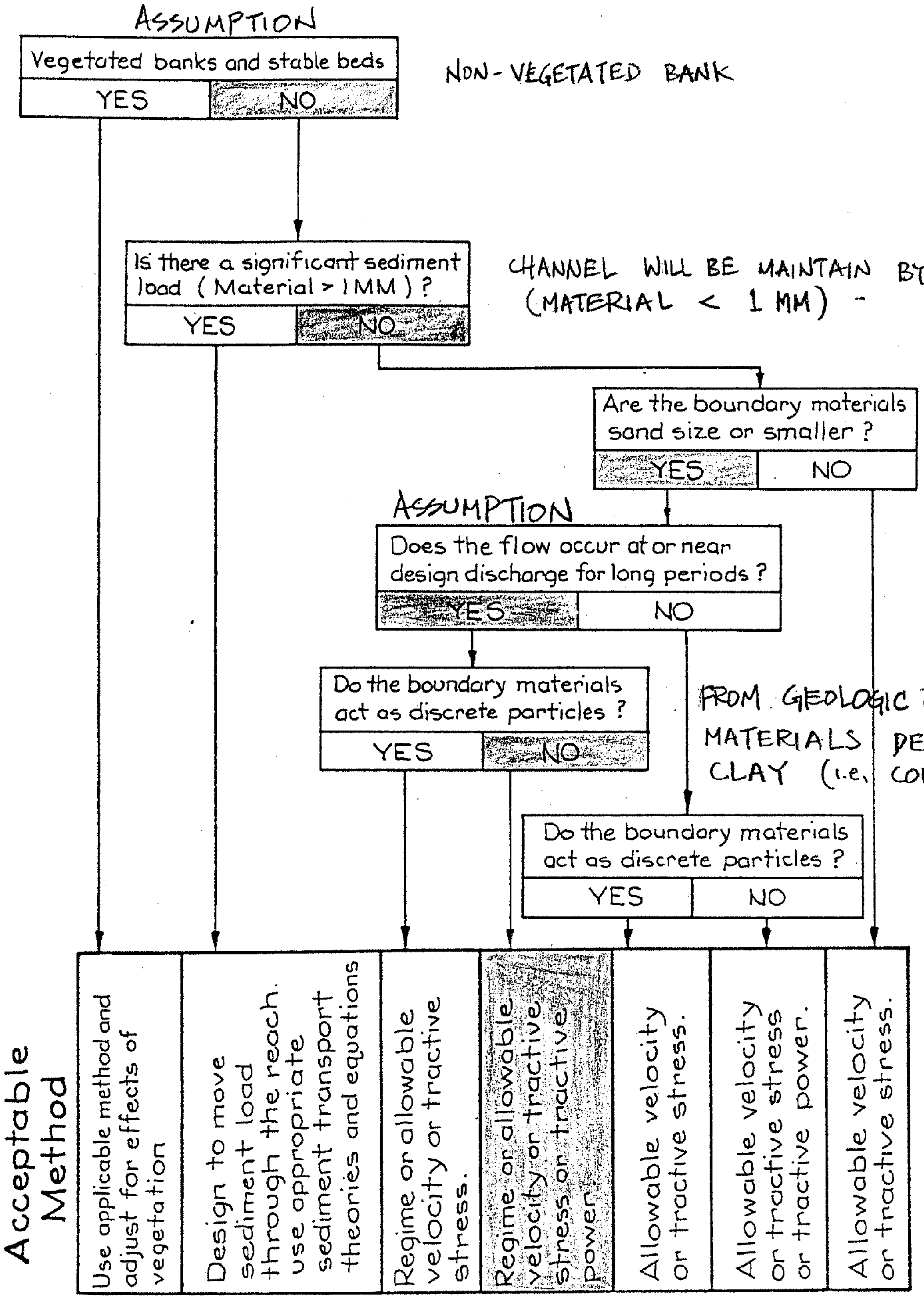
Stream Power=44.8478  n=0.029  So=0.000600  Sf=0.022193   Headloss Factor=0.000    Total Headloss=1.110 ft. Se=0.022192

 2+00.00   4100.00   50.00    2.00    5.492    4.353    255.5     16.04     67.74      59.39     63.74    5.44     1.45     6.79

Stream Power=22.1892  n=0.029  So=0.000600  Sf=0.011218   Headloss Factor=0.000    Total Headloss=0.561 ft. Se=0.011218

 1+50.00   4100.00   50.00    2.00    5.492    5.458    332.5     12.33     67.18      59.36     64.82    6.82     1.01     5.55
```

CHANNEL EVALUATION PROCEDURAL GUIDE


Vegetated banks and stable beds
YES
NO
Is there a significant sediment load (Material > 1MM)?
YES
NO
Are the boundary materials sand size or smaller?
YES
NO
Does the flow occur at or near design discharge for long periods?
YES
NO
Do the boundary materials act as discrete particles?
YES
NO
Do the boundary materials act as discrete particles?
YES
NO
Acceptable Method
Use applicable method and adjust for effects of vegetation
Design to move sediment load through the reach. use appropriate sediment transport theories and equations
Regime or allowable velocity or tractive stress.
Regime or allowable velocity or tractive stress or tractive power.
Allowable velocity or tractive stress.
Allowable velocity or tractive stress or tractive power.
Allowable velocity or tractive stress.

ASSUMPTION

NON-VEGETATED BANK

CHANNEL WILL BE MAINTAIN BY SCWD MAINTENENCE (MATERIAL < 1 MM) -

FROM GEOLOGIC REPORT OCT. 1980

ASSUMPTION

FROM GEOLOGIC REPORT & CPT, MATERIALS DESCRIBE MOSTLY CLAY (i.e. COHESIVE)

Figure 6-1

LET'S USE EITHER TRACTIVE POWER METHOD OR ALLOWABLE VELOCITY.

Santa Clara Valley Water District
5750 Almaden Expressway, San Jose 95118, Phone 265-2600

Page 1 of

Scope No.

By LAU

Date 12/4/89

Checked by Date

Subject

CHECK CHANNEL STABILITY USING:

ALLOWABLE VELOCITY APPROACH

SCS REF. TR-25, FIGURE 6.2

STA 0+50 TO STA 8+50

FROM SCS, SUPPLEMENTARY SOIL MECHANICS REPORT

SOIL MATERIAL ⇒ CL
PI ⇒ 20^+

FROM GEOLOGIC REPORT, OCTOBER 1980

γ_d ⇒ 97 pcf

FROM HEC-2 OUTPUT, $Q_{10\%} = 4100$

STRAIGHT SECTION ⇒ MAX. $V = 4.51'$, $d = 12.22'$
(PROTECTED) CURVE SECTION ⇒ MAX. $V = 4.54'$ $d_c = 12.15'$
(UNPROTECTED) CURVE SECTION ⇒ MAX. $V = 3.53'$ $d_c = 12.25'$
RADIUS OF CURVE ⇒ $R_c = 325'$
WATER SURFACE WIDTH ⇒ $W = 4(12.25-4)+96 = 129'$

FROM TR-25, FIGURE 6.2

GIVEN $Q_{10\%}$ ⇒ $F_e = 1.0$
GIVEN d ⇒ $D = 1.29$
d_c ⇒ $D = 1.291$
GIVEN γ_d ⇒ $C_e = 1.09$

$$e = \text{VOID RATIO} = G\frac{\gamma_w}{\gamma_d} - 1 = \underset{\text{ASSUME}}{2.65}\,\frac{62.4}{97} - 1 = 0.705$$

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GIVEN R_c & W :

$$\frac{R_c}{W} = \frac{325}{129} = 2.51$$

$$\Rightarrow A_{min} = 0.7$$

ASSUME LADEN FLOW, $V_b = 5.5$ fps (FIGURE 6.2)

STRAIGHT SECTION (STA 0+50 TO STA 4+85)

$V_a = V_b D C_e F_e = 5.5 \times 1.29 \times 1.09 \times 1.0 = 7.73$ fps

MAXIMUN VELOCITY @ STRAIGHT SECTION = 4.51 fps

SINCE $V_a >$ MAX. V

THEN (STA 0+50 TO STA 4+85) IS STABLE

CURVE SECTION (STA 4+85 TO 8+50)

$V_a = V_b D_c C_e F_e A = 5.5 \times 1.291 \times 1.09 \times 1.0 \times 0.7 = 5.42$ fps

MAXIMUN VELOCITY @ UNPROTECTED CURVE SECTION = 3.53 fps

SINCE $V_a >$ MAX. V

THEN (STA 4+85 TO 8+50) IS STABLE

ASSUME FREE FLOW, $V_b = 4.0$ fps (FIGURE 6.2)

STRAIGHT SECTION

$V_a = 4.0 \times 1.29 \times 1.09 \times 1.0 = 5.62$ fps > MAX. V = 4.51 fps

$\Rightarrow$ STABLE

CURVE SECTION

$V_a = 4.0 \times 1.291 \times 1.09 \times 1.0 \times 0.7 = 3.94$ fps > MAX. V = 3.53 fps

$\Rightarrow$ STABLE

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STA 26+21 TO STA 37+88

FROM SCS, SUPPLEMENTARY SOIL MECHANICS REPORT

SOIL MATERIAL ⇒ CL
PI ⇒ 20^+

FROM GEOLOGIC REPORT, OCTOBER 1980

γ_d ⇒ 101 pcf

FROM HEC-2 OUTPUT, $Q_{10\%} = 4100$

CURVE (STA 26+21 TO 29+17) ⇒ MAX. V = 5.21 fps, $d_c^1 = 9.87'$
STRAIGHT (STA 29+17 TO 30+48) ⇒ MAX. V = 4.63 fps, $d^2 = 9.96'$
CURVE (STA 30+48 TO 33+30) ⇒ MAX. V = 4.33 fps, $d_c^3 = 10.00'$
STRAIGHT (STA 33+30 TO 37+88) ⇒ MAX. V = 5.24 fps, $d^4 = 9.82'$

RADIUS OF CURVE (STA 26+21 TO 29+17) ⇒ $R_c^1 = 470'$; $W^1 = 129.48'$
RADIUS OF CURVE (STA 30+48 TO 33+30) ⇒ $R_c^3 = 360'$, $W^3 = 130.0'$

FROM TR-25, FIGURE 6.2

GIVEN $Q_{10\%}$ ⇒ $F_e = 1.0$
GIVEN d_c^1 ⇒ $D_c^1 = 1.25$
d^2 ⇒ $D^2 = 1.251$
d_c^3 ⇒ $D_c^3 = 1.252$
d^4 ⇒ $D^4 = 1.249$
GIVEN γ_d ⇒ $C_e = 1.12$

$$e = 2.65 \frac{62.4}{101} - 1 = 0.637$$

GIVEN R_c^1 & W^1 ⇒ $\frac{R_c^1}{W^1} = 3.63$

R_c^3 & W^3 ⇒ $\frac{R_c^3}{W^3} = 2.77$

$\Rightarrow A_{min} = 0.7$

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ASSUME LADEN FLOW, $V_b = 5.5$ fps (FIGURE 6.2)

CURVE (STA 26+21 TO 29+17)

$V_a = 5.5 \times 1.25 \times 1.12 \times 1.0 \times 0.7 = 5.39$ fps > MAX. V = 5.21 fps

$\Rightarrow$ STABLE

STRAIGHT (STA 29+17 TO 30+48)

$V_a = 5.5 \times 1.251 \times 1.12 \times 1.0 = 7.71$ fps > MAX. V = 4.63 fps

$\Rightarrow$ STABLE

CURVE (STA 30+48 TO 33+30)

$V_a = 5.5 \times 1.252 \times 1.12 \times 1.0 \times 0.7 = 5.40$ fps > MAX. V = 4.33 fps

$\Rightarrow$ STABLE

STRAIGHT (STA 33+30 TO 37+88)

$V_a = 5.5 \times 1.249 \times 1.12 \times 1.0 = 7.69$ fps > MAX. V = 5.24 fps

$\Rightarrow$ STABLE

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ASSUME FREE FLOW, $V_b = 4.0$ (FIGURE 6.2)

CURVE (STA 26+21 TO 29+17)

$V_a = 4.0 \times 1.25 \times 1.12 \times 1.0 \times 0.7 = 3.92$ fps $\not>$ MAX. $V = 5.21$ fps

$\Rightarrow$ UNSTABLE

STRAIGHT (STA 29+17 TO 30+48)

$V_a = 4.0 \times 1.251 \times 1.12 \times 1.0 = 5.60$ fps $>$ MAX. $V = 4.63$ fps

$\Rightarrow$ STABLE

CURVE (STA 30+48 TO 33+30)

$V_a = 4.0 \times 1.252 \times 1.12 \times 1.0 \times 0.7 = 3.93$ fps $\not>$ MAX $V = 4.33$ fps

$\Rightarrow$ UNSTABLE

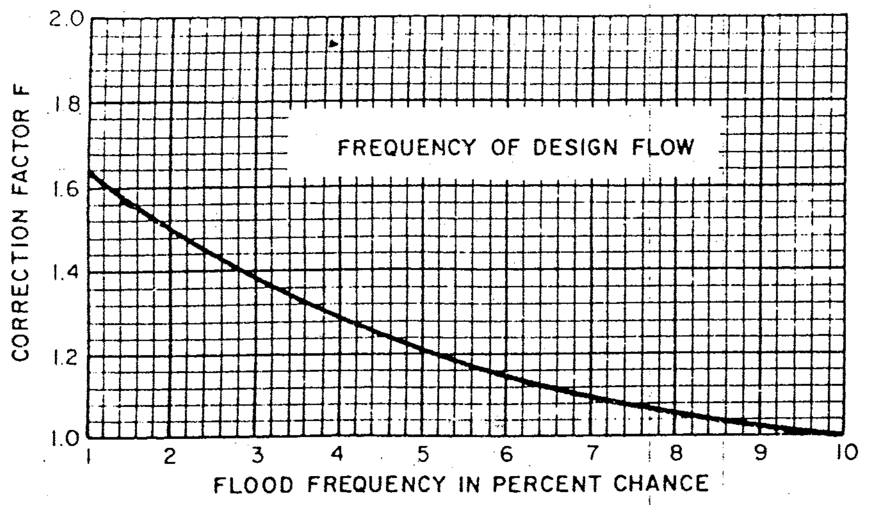
STRAIGHT (STA 33+30 TO 37+88)

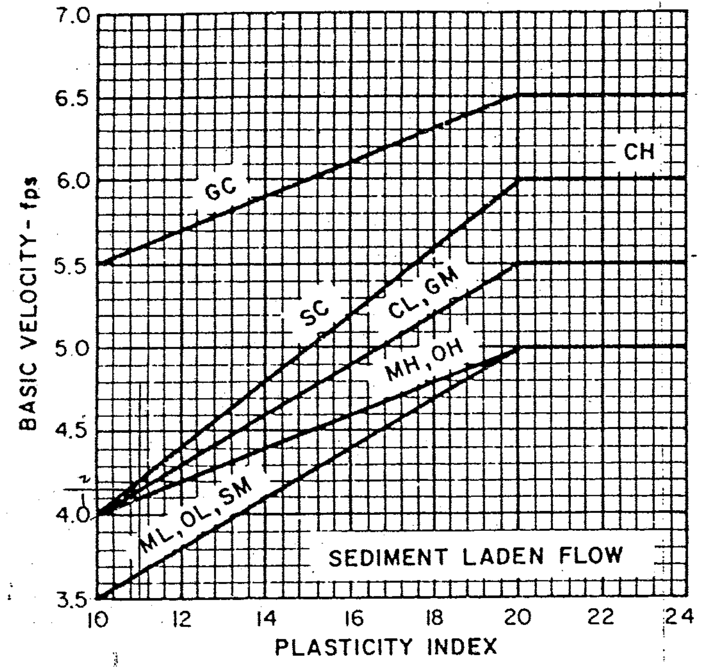
$V_a = 4.0 \times 1.249 \times 1.12 \times 1.0 = 5.60$ fps $>$ MAX. $V = 5.24$ fps

$\Rightarrow$ STABLE

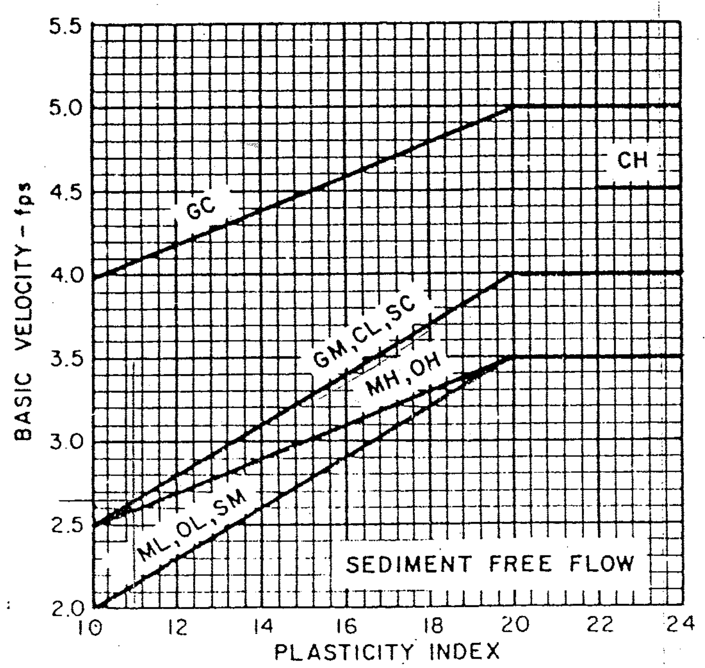
BOTH CURVE SECTION (STA 26+21 TO 29+17) AND (STA 30+48 TO 33+30) ARE UNSTABLE. A SLOPE PROTECTION IS REQUIRE AT THESE SECTION.

USE $\Rightarrow$ LOOSE ROCK RIPRAP BETWEEN
STATIONS 26+21 & 29+17
AND STATIONS 30+48 & 33+30.

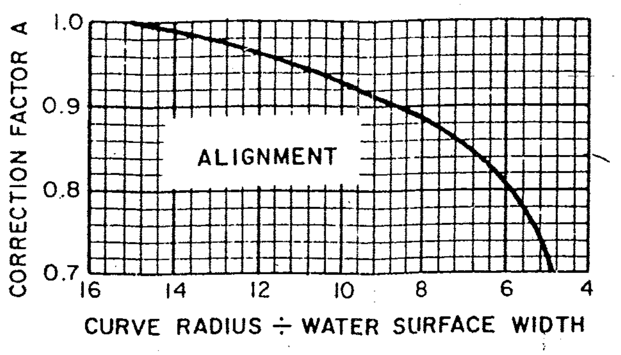


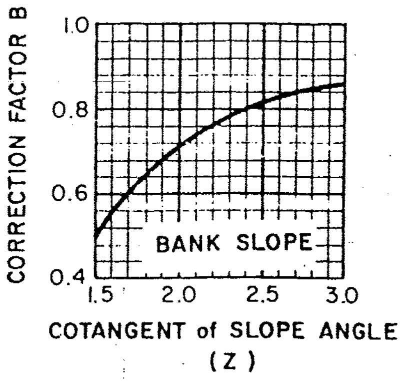


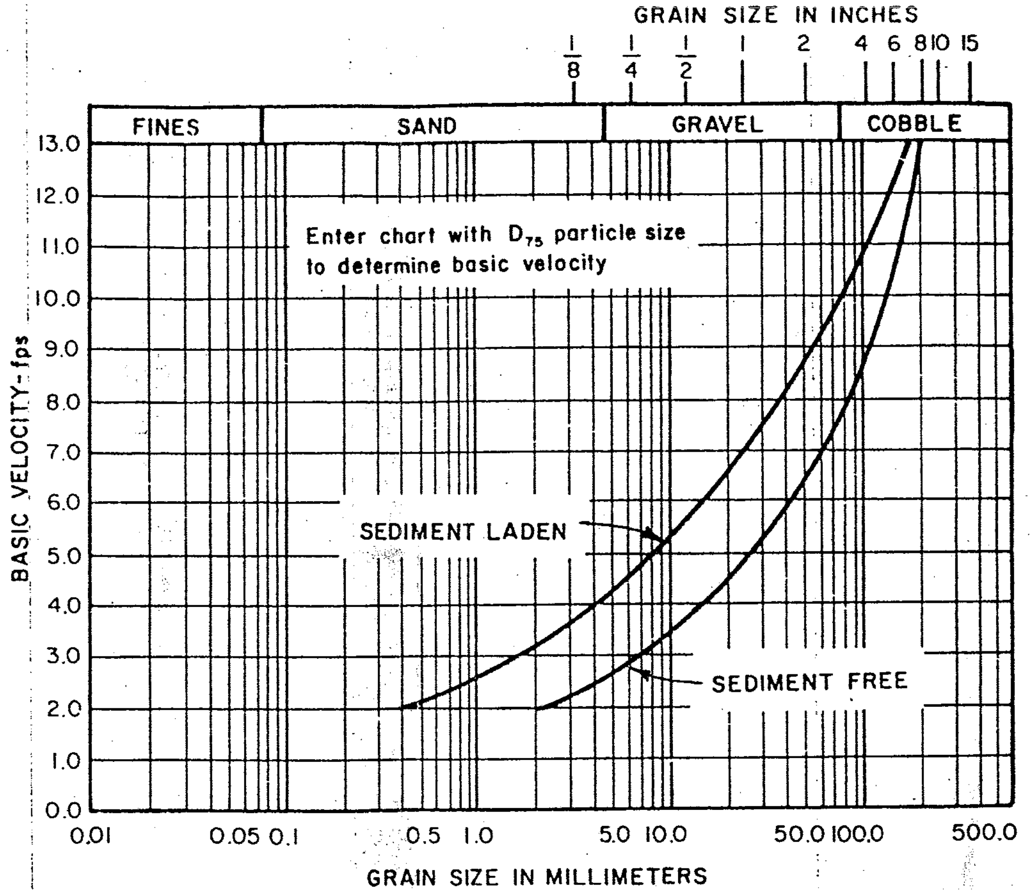
BASIC VELOCITIES FOR COHERENT EARTH MATERIALS (v_b)



BASIC VELOCITIES FOR COHERENT EARTH MATERIALS (v_b)

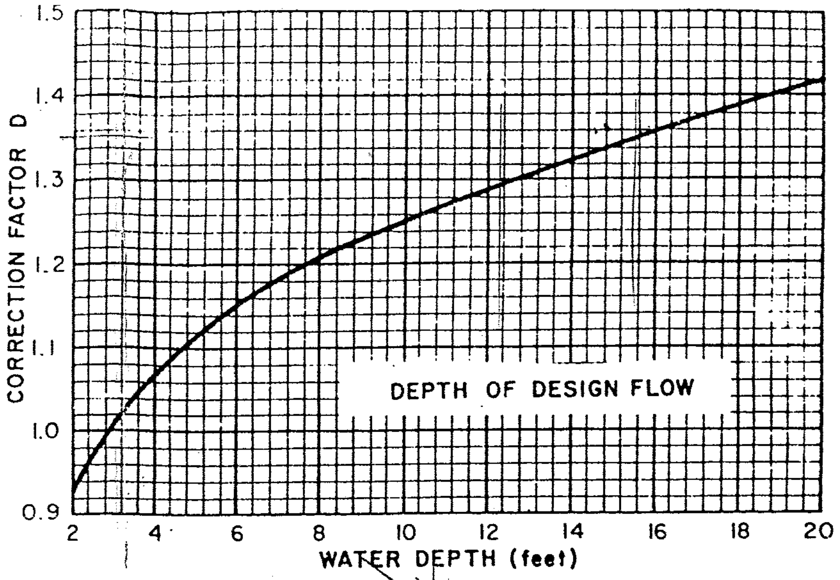


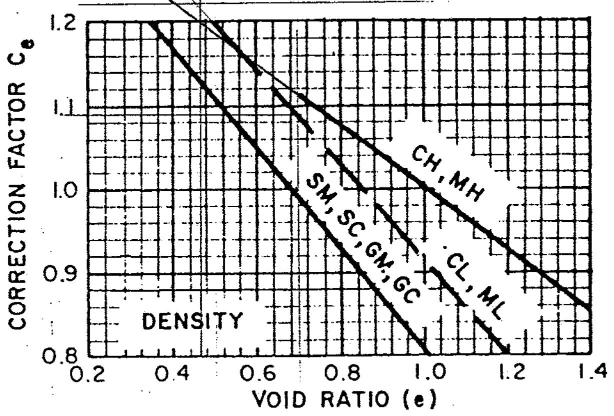




BASIC VELOCITY FOR DISCRETE PARTICLES OF EARTH MATERIALS (v_b)

ALLOWABLE VELOCITIES FOR UNPROTECTED EARTH CHANNELS	
CHANNEL BOUNDARY MATERIALS	ALLOWABLE VELOCITY
DISCRETE PARTICLES	
Sediment Laden Flow	
$D_{75} > 0.4$ mm	Basic velocity chart value x D x A x B
$D_{75} < 0.4$ mm	2.0 fps
Sediment Free Flow	
$D_{75} > 2.0$ mm	Basic velocity chart value x D x A x B
$D_{75} < 2.0$ mm	2.0 fps
COHERENT EARTH MATERIALS	
PI > 10	Basic velocity chart value x D x A x F x C_e
PI < 10	2.0 fps





NOTES:

1. In no case should the allowable velocity be exceeded when the 10% chance discharge occurs, regardless of the design flow frequency.

FIGURE 6-2

ALLOWABLE VELOCITIES FOR UNPROTECTED EARTH CHANNELS

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ANOTHER METHOD TO CHECK CHANNEL STABILITY IS THE

TRACTIVE POWER METHOD

SCS REF: TECHNICAL RELEASE 25 (TR-25)

A COMPUTER PROGRAM CALLED CHANSTAB (CHANNEL STABILITY PROGRAM) WAS USED TO AID IN CHECKING THE STABILITY OF EARTHEN CHANNEL DESIGN.

CHANSTAB IS BASED ON THE PROCEDURES DESCRIBED IN SCS TR-25.

Santa Clara Valley Water District

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TRACTIVE POWER METHOD DATA

$Q_{10\%}$ = 4100 cfs

d = DEPTH ⇒ HEC-2 OUTPUT

V = VELOCITY ⇒ HEC-2 OUTPUT

q_u = 1000 psf ⇒ SCS, SOIL MECHANICS REPORT

S_e = SLOPE OF THE ENERGY GRADE LINE ⇒ HEC-2 OUTPUT

$$\left.\begin{matrix} d75 \\ d65 \\ d50 \end{matrix}\right\} \Rightarrow$$

GEOLOGIC REPORT FOR LOWER SILVER CREEK
OCTOBER 1980

```
PROJECT: LOWER SILVER CREEK, REACHES 1 & 2
STATION: 0+50 TO 8+50
SAMPLE NO.: 1
BY: GORDON LAU
DATE: 12/04/89
SET NUMBER          1

 Q(cfs)     b(ft)    z        n        d(ft)     v(fps)
 ------     -----    -        -        -----     ------
 4100.      50.0    2.0      .029      12.2      4.51

 Rc(ft)    Lc(ft)     qu        Se
 ------    ------   ------      --
 325.0     435.0    1000.0    .0004

d75(mm)   d65(mm)   d50(mm)  tWATER      SEDLOAD
-------   -------   -------  ------      -------
  .023      .015      .006     60.            .0

   ANGULARITY
   ----------
Not applicable


   Tref      Tb         Ts      Ta - allowable
   ----      --         --      --
   .049     .068       .053   1.845

    Tbc      Tbt        Tsc      Tst      VTb
    ---      ---        ---      ---      ---
   .092     .074       .072     .058     .304

   VTbc     VTbt        VTs     VTsc     VTst
   ----     ----        ---     ----     ----
   .415     .333       .239     .326     .261

 VTb (bottom straight section)    IS STABLE
 VTs (side straight section)      IS STABLE
 VTbc (bottom in curve)           IS STABLE
 VTbt (bottom at curve tangent)   IS STABLE
 VTsc (side in curve)             IS STABLE
 VTst (side at curve tangent)     IS STABLE
```

```
PROJECT: LOWER SILVER CREEK, REACHES 1 & 2
STATION: 26+21 TO 29+17
SAMPLE NO.: 2
BY: GORDON LAU
DATE: 12/04/89
SET NUMBER          2

 Q(cfs)     b(ft)    z        n        d(ft)     v(fps)
 ------     -----    -        -        -----     ------
 4100.      60.0    2.0      .025       9.9      5.21

 Rc(ft)    Lc(ft)    qu        Se
 ------    ------   -----      --
 470.0       .0     1000.0    .0010

d75(mm)   d65(mm)   d50(mm)  tWATER      SEDLOAD
-------   -------   -------  ------      -------
  .090     .047      .019      60.              .0

   ANGULARITY
   ----------
Not applicable


   Tref      Tb        Ts      Ta - allowable
   ----      --        --      --
   .069     .091      .070   1.845

    Tbc      Tbt       Tsc      Tst      VTb
    ---      ---       ---      ---      ---
   .111     .111      .085     .085     .476

   VTbc     VTbt       VTs      VTsc     VTst
   ----     ----       ---      ----     ----
   .579     .579      .365     .443     .443

 VTb (bottom straight section)     IS STABLE
 VTs (side straight section)       IS STABLE
 VTbc (bottom in curve)            IS STABLE
 VTbt (bottom at curve tangent)    IS STABLE
 VTsc (side in curve)              IS STABLE
 VTst (side at curve tangent)      IS STABLE
```

```
PROJECT: LOWER SILVER CREEK, REACHES 1 & 2
STATION: 29+17 TO 33+30
SAMPLE NO.: 3
BY: GORDON LAU
DATE: 12/04/89
SET NUMBER          3

 Q(cfs)      b(ft)     z         n        d(ft)      v(fps)
 ------      -----     -         -        -----      ------
 4100.       60.0     2.0      .025       10.0       4.63

 Rc(ft)     Lc(ft)      qu         Se
 ------     ------     ----        --
 360.0      131.0     1000.0     .0004

d75(mm)    d65(mm)    d50(mm)   tWATER      SEDLOAD
-------    -------    -------   ------      -------
  .090       .047       .019      60.             .0

   ANGULARITY
   ----------
Not applicable


   Tref       Tb          Ts       Ta - allowable
   ----       --          --       --
   .051      .067        .051   1.845

    Tbc       Tbt         Tsc      Tst      VTb
    ---       ---         ---      ---      ---
   .096      .096        .073     .073     .311

   VTbc      VTbt         VTs      VTsc     VTst
   ----      ----         ---      ----     ----
   .443      .443        .238     .340     .340

 VTb (bottom straight section)     IS STABLE
 VTs (side straight section)       IS STABLE
 VTbc (bottom in curve)            IS STABLE
 VTbt (bottom at curve tangent)    IS STABLE
 VTsc (side in curve)              IS STABLE
 VTst (side at curve tangent)      IS STABLE
 PROJECT: LOWER SILVER CREEK, REACHES 1 & 2
 STATION: 33+00 TO 37+86
 SAMPLE NO.: 4
 BY: GORDON LAU
 DATE: 12/04/89
 SET NUMBER          4

  Q(cfs)     b(ft)    z        n       d(ft)     v(fps)
  ------     -----    -        -       -----     ------
  4100.      60.0    2.0      .025      9.8      5.24

  Rc(ft)    Lc(ft)     qu         Se
  ------    ------     --         --
     .0     458.0     1000.0     .0010

 d75(mm)   d65(mm)   d50(mm)  tWATER      SEDLOAD
 -------   -------   -------  ------      -------
   .090     .047      .019       60.           .0

    ANGULARITY
    ----------
 Not applicable


    Tref    Tb       Ts      Ta      VTb     VTs
    ----    --       --      --      ---     ---
   .070    .092     .071   1.845     .484    .371


  VTb (bottom)    IS STABLE
  VTs (side)      IS STABLE

C:\SCS>
```

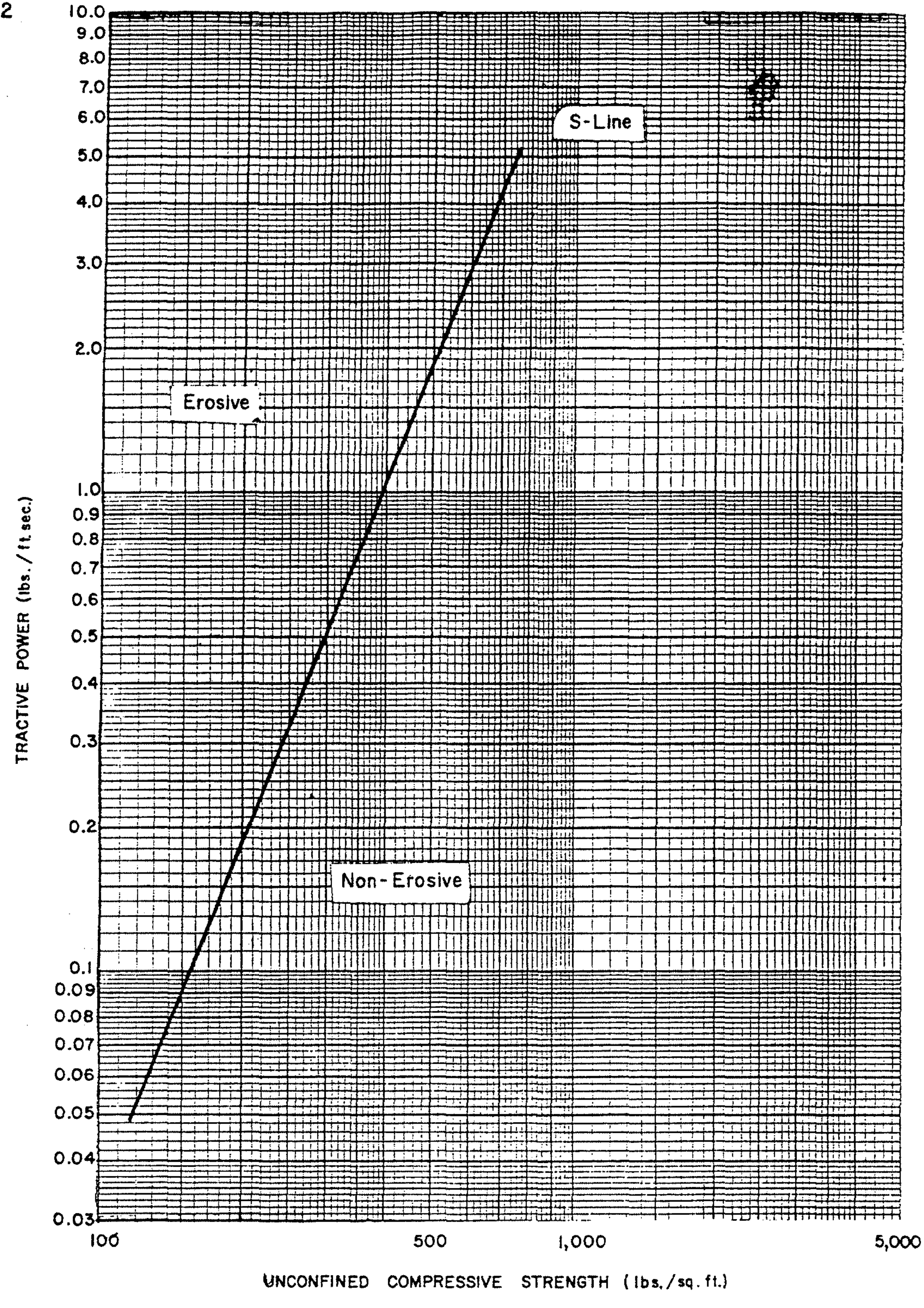

Figure 6-15
Unconfined Compressive Strength And Tractive Power As Related To Channel Stability

LOWER SILVER CREEK WATERSHED
SANTA CLARA COUNTY
CALIFORNIA

SUPPLEMENTARY
SOIL MECHANICS REPORT
FOR
LOWER SILVER CREEK

STATIONS 0+00 TO 53+25

SEPTEMBER, 1989
SOIL CONSERVATION SERVICE
DAVIS, CALIFORNIA

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SCS CPT INTERPRETATIONS
SLOPE STABILITY RESULTS

SUPPLEMENTARY
SOIL MECHANICS REPORT
FOR
LOWER SILVER CREEK

BACKGROUND

Lower Silver Creek is a flood control project that is located in the eastern portion of the City of San Jose, California. This investigation covers Reach I and part of Reach II. This is at the outlet end of the project. The existing channel is an unlined earth section.

Improvements in this reach include sections of the following; an enlarged stable earth channel, concrete lined trapezoidal channel and reinforced rectangular channel. One grade control structure is planned near the outlet.

The purpose of this investigation was to supplement the foundation investigation that was performed during the planning stage of this project. This data is contained in the "Geologic Report for Lower Silver Creek", dated October,1980.

INVESTIGATION PROCEDURES

This investigation was performed using Cone Penetration Testing (CPT) equipment. The contractor for the work was V.B.I. In-Situ Testing Technologists of Oakland, CA. An electronic CPT device, capable of developing a thrust of 20 tons, was used following the procedures in ASTM D 3441-79.

Data collected in the field included tip resistance, local friction, friction ratio, and pore pressure. Computer interpretations of the data include soil behavior type, relative density, phi angle, standard penetration test (SPT), and unconfined shear strength (Su)

A total of 15 CPT's were completed. The depth averaged 20 to 25 feet with the maximum depth at the outlet end of 40 feet.

CPT's were planned to coincide as near as possible to the location of the previous borings from the October, 1980, Geologic Report.

DISCUSSION

The purpose of this investigation was to supplement the data from the existing geology report for this project. Supplemental data was collected in order to provide additional details to design the various types of channel that are planned for this area.

The channel improvements planned are as follows:

Reaches I & II

00+50 - 09+00	Earth Channel
09+00 - 27+00	Trapezoidal Concrete Lined Channel
27+00 - 39+00	Earth Channel
39+00 - 53+25	Reinforced Concrete Rectangular Channel

The appendix contains SCS interpretations for each CPT. These interpretations are a combination of information from this investigation and the Geologic Report dated October, 1980. These interpretations include; average standard penetration test values (SPT), the range of soil strength values, and generalized soil type and unified soil classification symbol.

These are general interpretations for similar soils and give a range for strength values. The minimum value should be considered the governing strength for that soil type.

Slope stability analysis were run to verify the stability of the planned slopes and also for temporary construction slopes.

CONCLUSIONS

1. This investigation uncovered no unusual soil or foundation conditions that would preclude proceeding with the design of the planned improvements.

2. The soils in this reach of channel are predominantly fine grained clays and silty clays.

3. The various investigations show the water table at or near the invert level. Construction dewatering will be required through out this reach. Also the water table levels noted on the CPT information is estimated. No actual water table measurements were taken during this investigation.

4. The planned side slopes have been checked for stability using a simplified Bishop analysis. All planned slopes were found to be stable with adequate safety factors.

5. This supplementary data is not intended to cover all the needs for design. This report should be used in conjunction with the CPT data and the 1980 Geologic Report.

RECOMMENDATIONS

Station 0+00 to 9+00, Earth Channel

1. Stable earth channel design for this reach can be by either tractive power or the allowable velocity approach (SCS reference, TR-25).

Unconfined shear stress values (Su) ranged from a low of 1000 psf to a high of 3400 psf. This reach also includes some thin layers of silty materials that will be low plasticity or non plastic. However, they appear to be thin enough to not govern the design.

The design for the tractive power technique could be done with a conservative unconfined compressive stress value (Su) of 1000 psf that would cover all the soils in this reach or it could be broken into smaller reaches taking advantage of the areas with higher strengths. The summaries in the appendix have average values for different soil layers.

For use in the allowable velocity approach, the soils are predominantly CL's and the plasticity indexes (P.I.) are above 20.

2. There is a very soft layer at the level of the proposed invert at CPT #3 (Station 9+00). This material should be removed and replaced with compacted clayey material or the invert elevation set below this level. The extent of this material is difficult to determine based on just one test.

The construction drawing should state that the extent of this material is uncertain and the final limits will need to be determined at the time of excavation.

3. Most of the weaker sandy, silty layers are near the surface. However, their strength is not a concern if the computed water surface doesn't reach them.

4. The soils exhibit adequate strength to stand on 2:1 slopes. Safety factors of ________ have been calculated.

5. The groundwater table will most likely be at or just above the invert level at the time of construction. A dewatering item should be included in the construction contract.

Station 9+00 to 27+00, Trapezoidal Concrete Lined Channel

1. Since the water table will be above the invert for at least part of the year, the channel lining will need a positive drain system to relieve uplift pressures. The investigation showed some thin sandy, silty layers that may also be subject to piping.

A two stage filter and drain system with a collector pipe is recommended. ASTM C-33 fine aggregate will be adequate to control piping. This gradation is a little coarser than the results from SCS Soil Mechanics Note #1, this is a low head situation and the permeability is more critical than the piping potential. The drain system should be designed in accordance with SCS, Soil Mechanics Note #1.

2. Slope stability calculations show the planned side slopes to be stable at 1.5 to 1. The safety factor for this case assuming a water table approximately 1/2 way up the slope is _____.

3. The groundwater table will most likely be at or just above the invert level at the time of construction. A dewatering item should be included in the construction contract.

Station 27+00 to 39+00, Earth Channel

1. This reach of earth channel can be designed using the same procedures recommended previously for the outlet section.

Unconfined shear stress values (Su) in general are above 1000 psf except for the area of the channel invert at station 39+00 (CPT #12) There is a weaker soil type here and it may be advantageous to remove this material or use a lower value for design.

Except for some of the soils near the surface, the predominant soil type is CL with a plasticity index of 20 or greater.

2. The planned 2:1 side slopes will be stable. The minimum safety factor found for a partially saturated slope was _____.

3. The groundwater table will most likely be at or just above the invert level at the time of construction. A dewatering item should be included in the construction contract.

Station 39+00 - 53+25, Reinforced Concrete Rectangular Channel

1. This reach is also consists predominantly of fine grained clayey soils. Uplift and drainage will be important since the invert can be below the water table for at least part of the year.

A dual filter and drain system with a collector pipe is recommended. The drain system should drain underneath the structure as well as the walls.

The design of the drain system should be in accordance with the procedures in SCS Soil Mechanics Note #1.

2. Lateral earth pressures on the walls of the channel will require the use of at rest earth pressures in the design. Based on the predominant classification of the soil and one triaxial test on similar material from the 1980 Geology Report, a phi angle of 17 degrees is recommended. Using Figure 2.12, in SCS, Engineering Design Standards, an at-rest coefficient of 0.75 is recommended where the backfill is level with the top of the wall. If a sloping backfill is used the coefficients will need to be increased.

A moist soil density of 130 pcf is recommended for sidewall loading (this is equivalent to a dry density of approximately 110 pcf @ 20% moisture).

A 2 foot soil surcharge is recommended at the top of the channel walls to simulate vehicle loadings that may occur during construction or maintenance operations.

3. Structure loads for a channel system such as this are generally less than one ton psf. No areas were noted at the proposed invert level that would not support this load.

Foundation loadings generally are not a problem for this type of situation because the weight of the structure is generally less than the amount of overburden removed. However it can be important if there is the possibility of differential settlements. This is not foreseen at the existing planned level of the invert.

5. Temporary construction excavation slopes of _____ have a safety factor of _____.

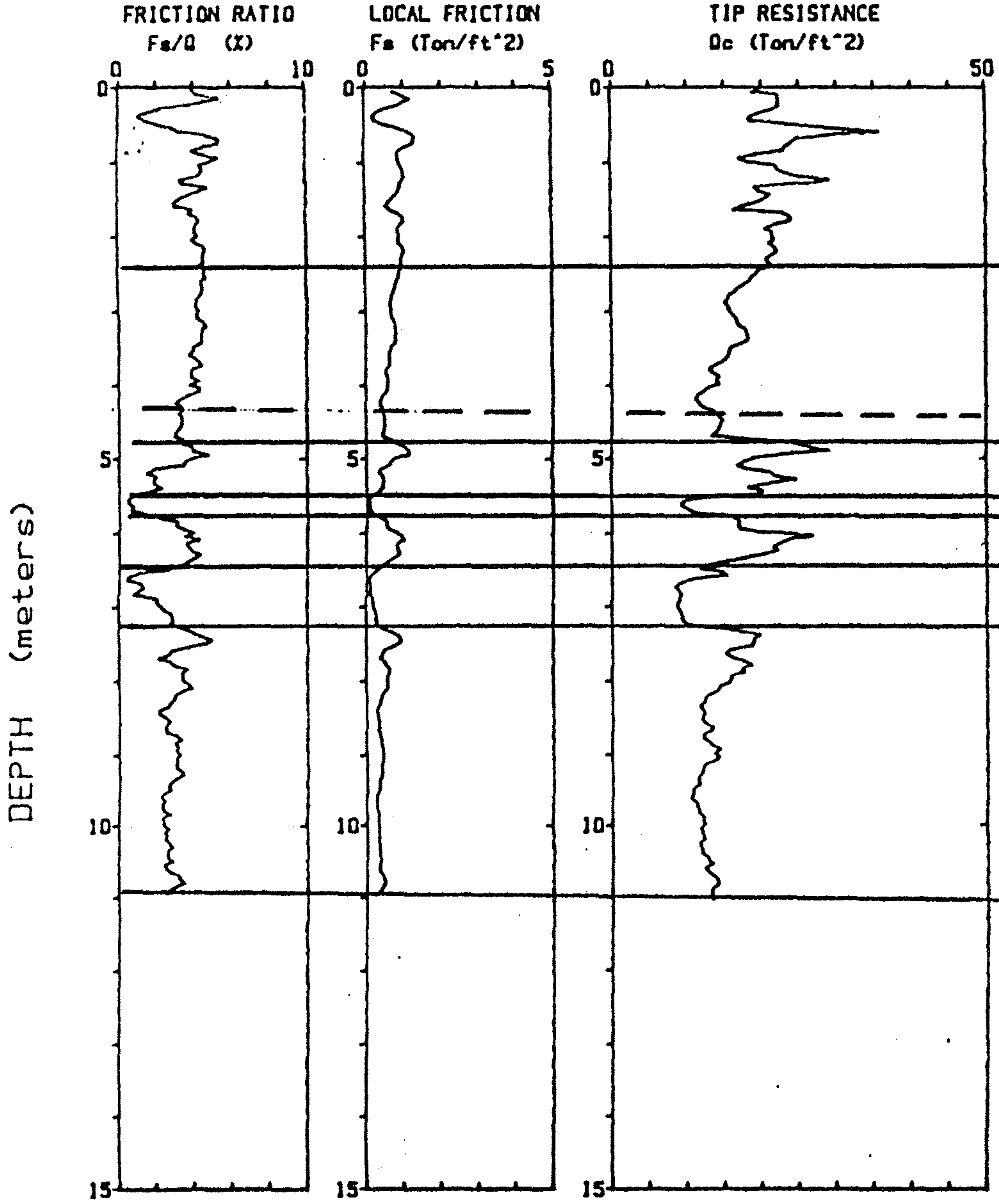
THOMAS W. SMITH DATE
Soil Mechanics Engineer

APPENDIX

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER **CPT Date :** 01-04-89 11:14 **Sounding :** 890006 Pg 1 / 1
Location : CPT-1 (STA. 3+27) **Cone Used :** H0260 **Job No. :** LOWER SILVER CK



Range of Su psf	Range of SPT	Generalized Soil Type	Comments
2400 to 3000	8 to 21	Clay and Sandy Silty Clay Layers CL	
1400 to 2000	9 to 17	Clay CL	← Proposed Channel Invert
2200	8 to 16	Silty Clay CL	
1200	4		← Soft
1800 to 2700	8 to 15	Silty Clay CL	
1000 to 1200	4 to 6	Silty Clay CL	← Soft
1200 to 2000	5 to 17	Silty Clay CL	

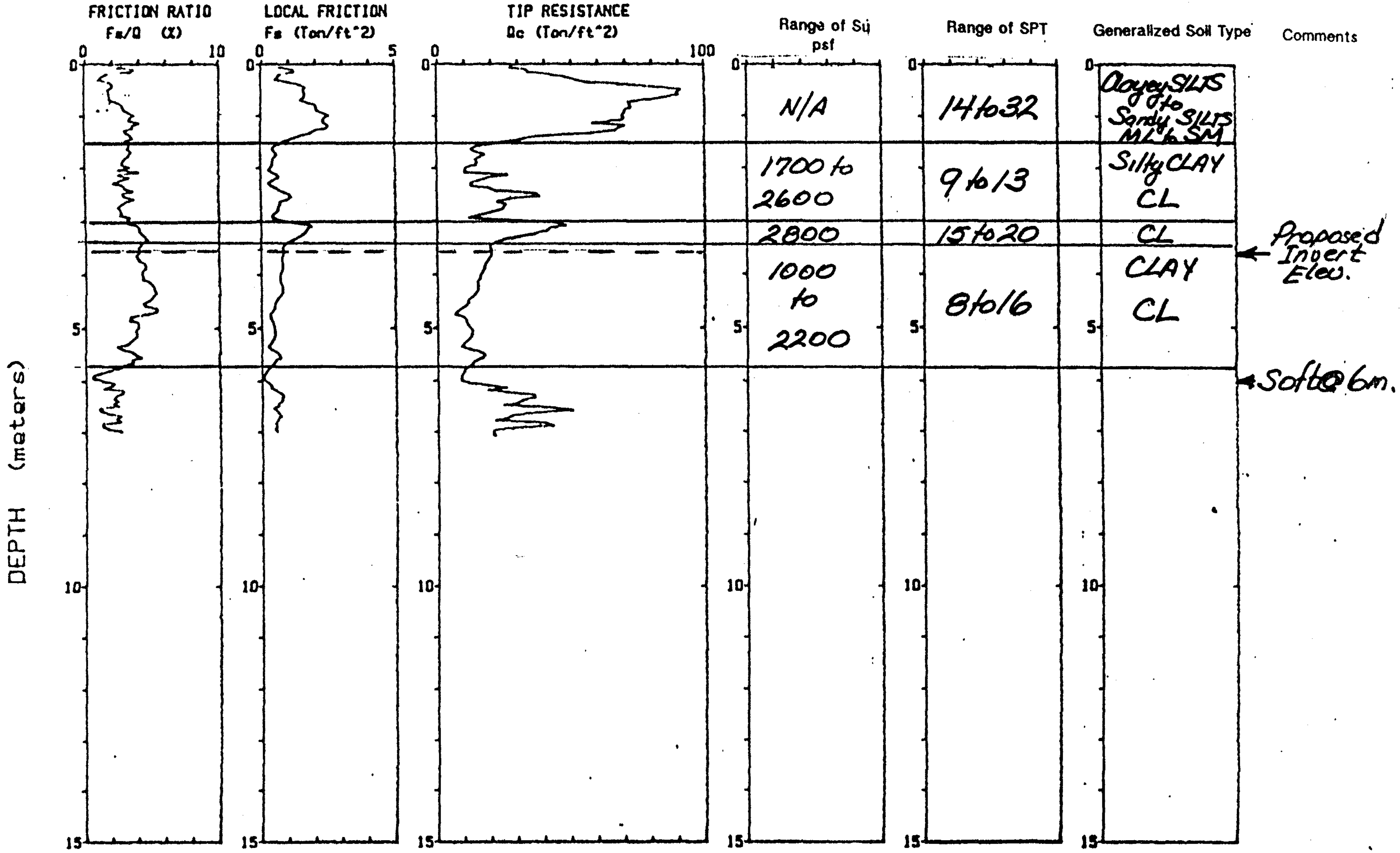
Depth Increment : .05 m Max Depth : 11.05 m

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER CPT Date : 01-04-89 12:15 Sounding : 890007 Pg 1 / 1

Location : CPT-2 (STA. 6+00) Cone Used : H0260 Job No. : LOWER SILVER CK



Depth Increment : .05 m

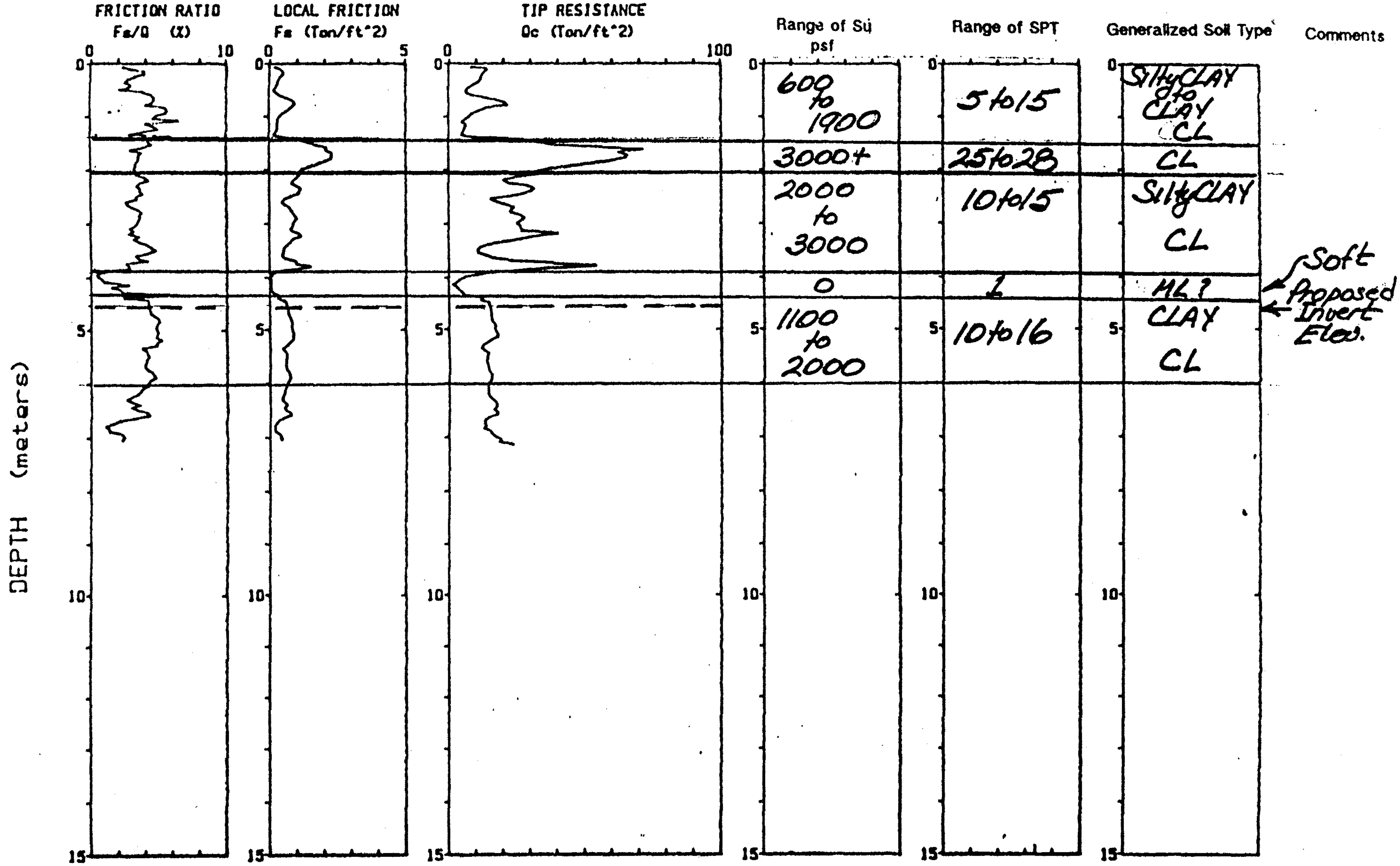
Max Depth : 7.10 m

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER **CPT Date :** 01-04-89 12:52 **Sounding :** 890008 Pg 1 / 1

Location : CPT-3 (STA. 9+00) **Cone Used :** H0260 **Job No. :** LOWER SILVER CK

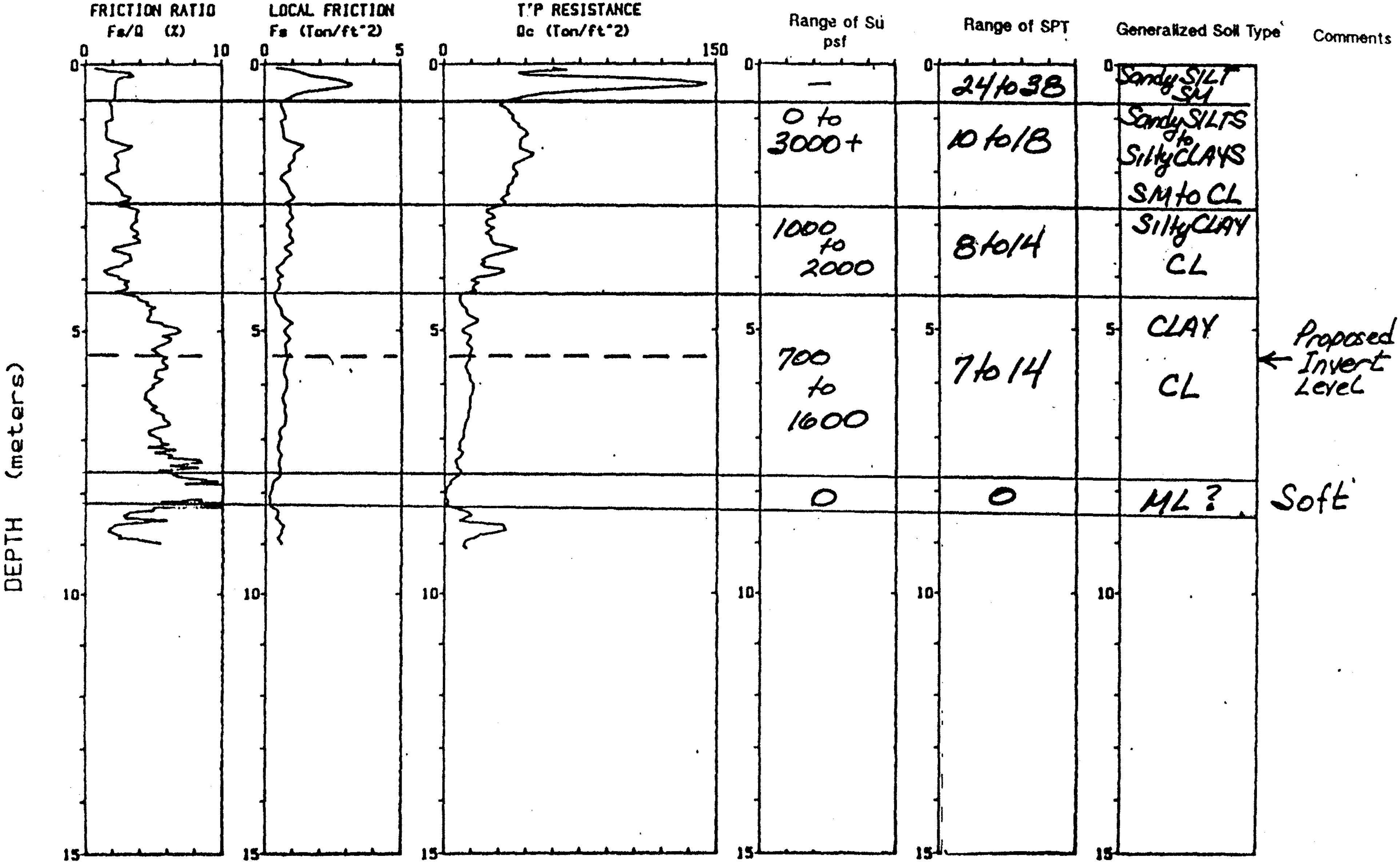


Depth Increment : .05 m **Max Depth :** 7.15 m

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER CPT Date : 01-04-89 13:34 Sounding : 890009 Pg 1 / 1
Location : CPT-4 (STA. 12+20) Cone Used : H0260 Job No. : LOWER SILVER CK

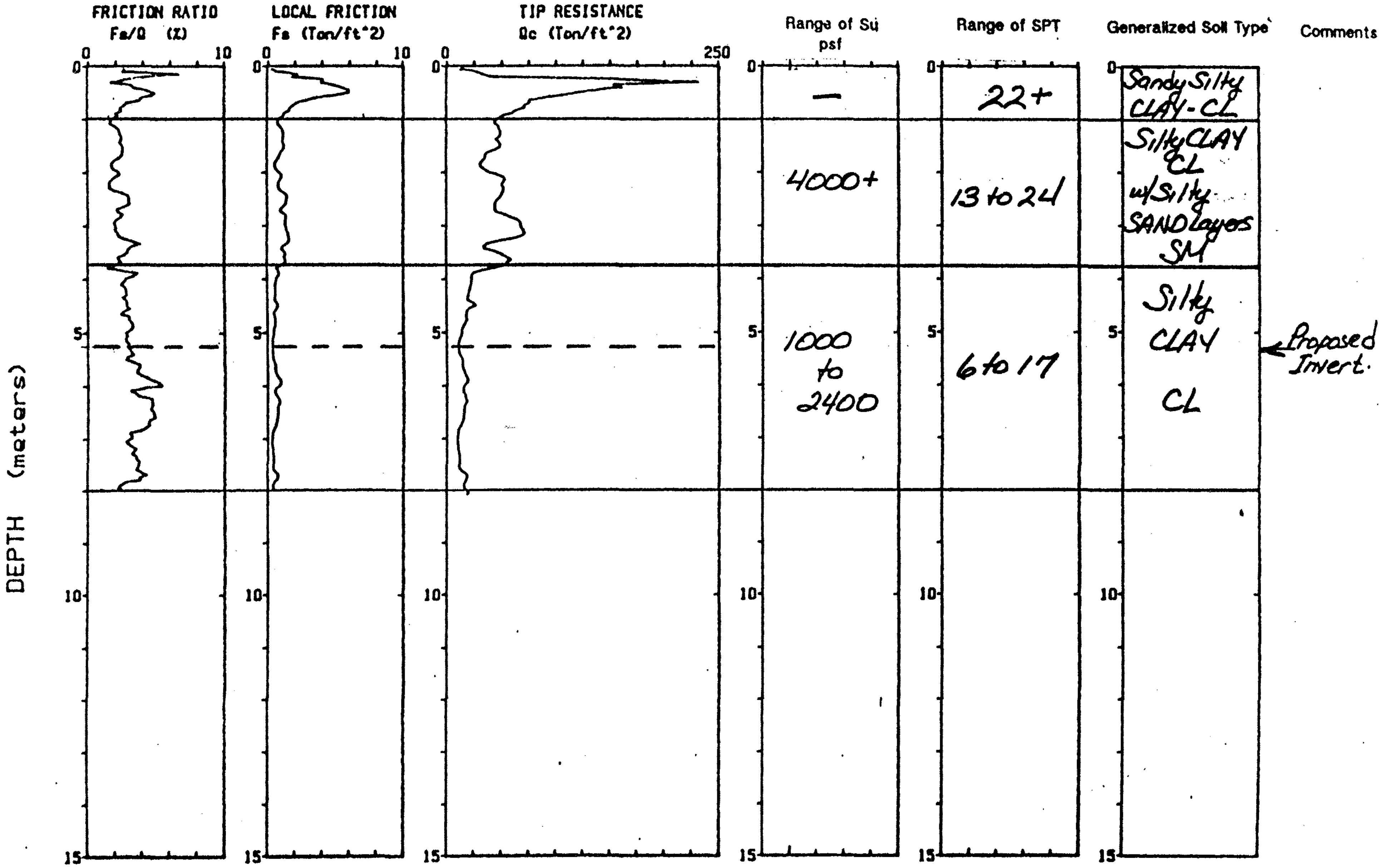


Depth Increment : .05 m Max Depth : 9.10 m

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER
CPT Date : 01-04-89 14:09
Sounding : 890010 Pg 1 / 1
Location : CPT-5 (STA. 15+00)
Cone Used : H0260
Job No. : LOWER SILVER CK

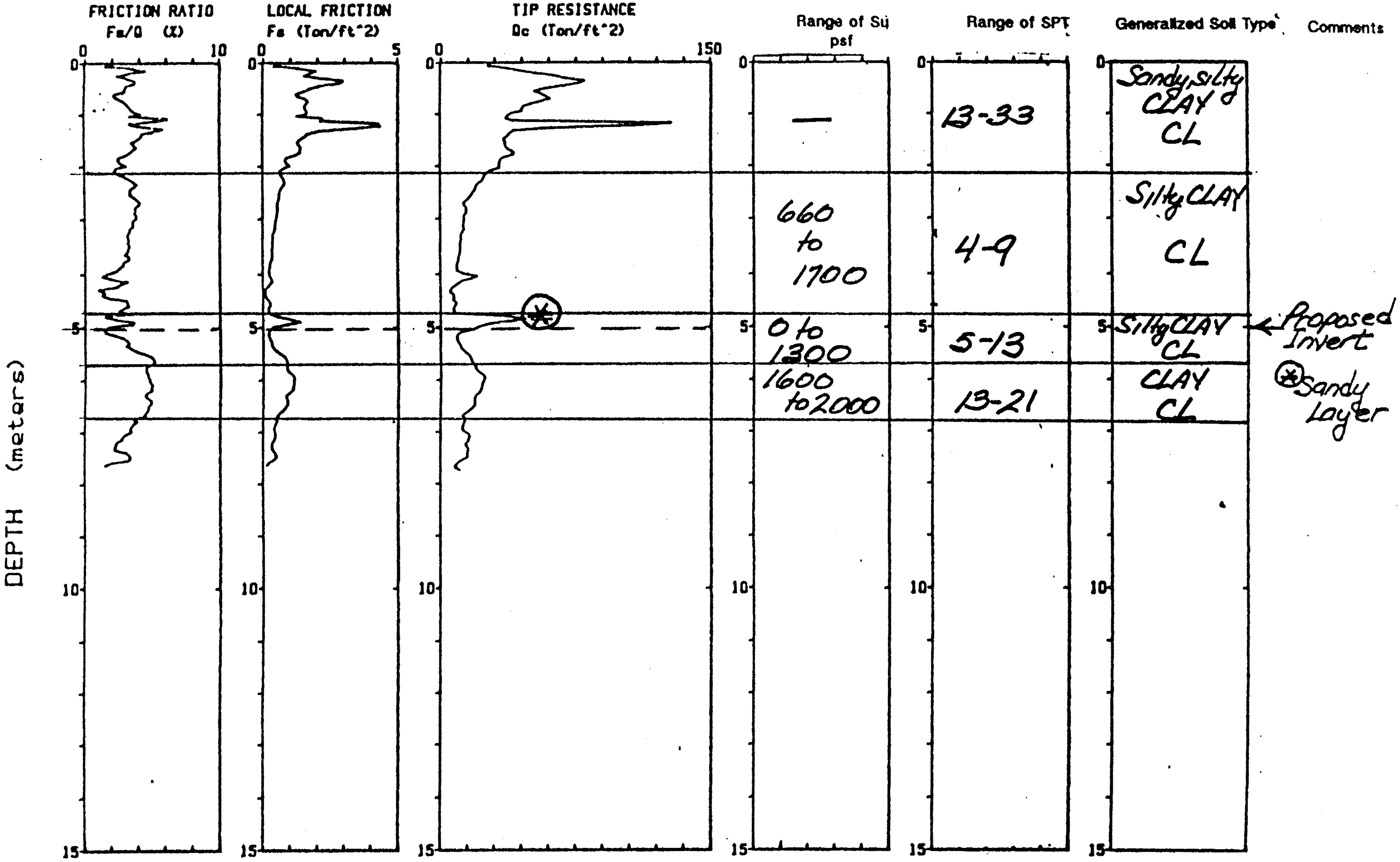


SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER **CPT Date :** 01-04-88 14:52 **Sounding :** 890011 Pg 1 / 1

Location : CPT-6 (STA. 18+00) **Cone Used :** H0260 **Job No. :** LOWER SILVER CK

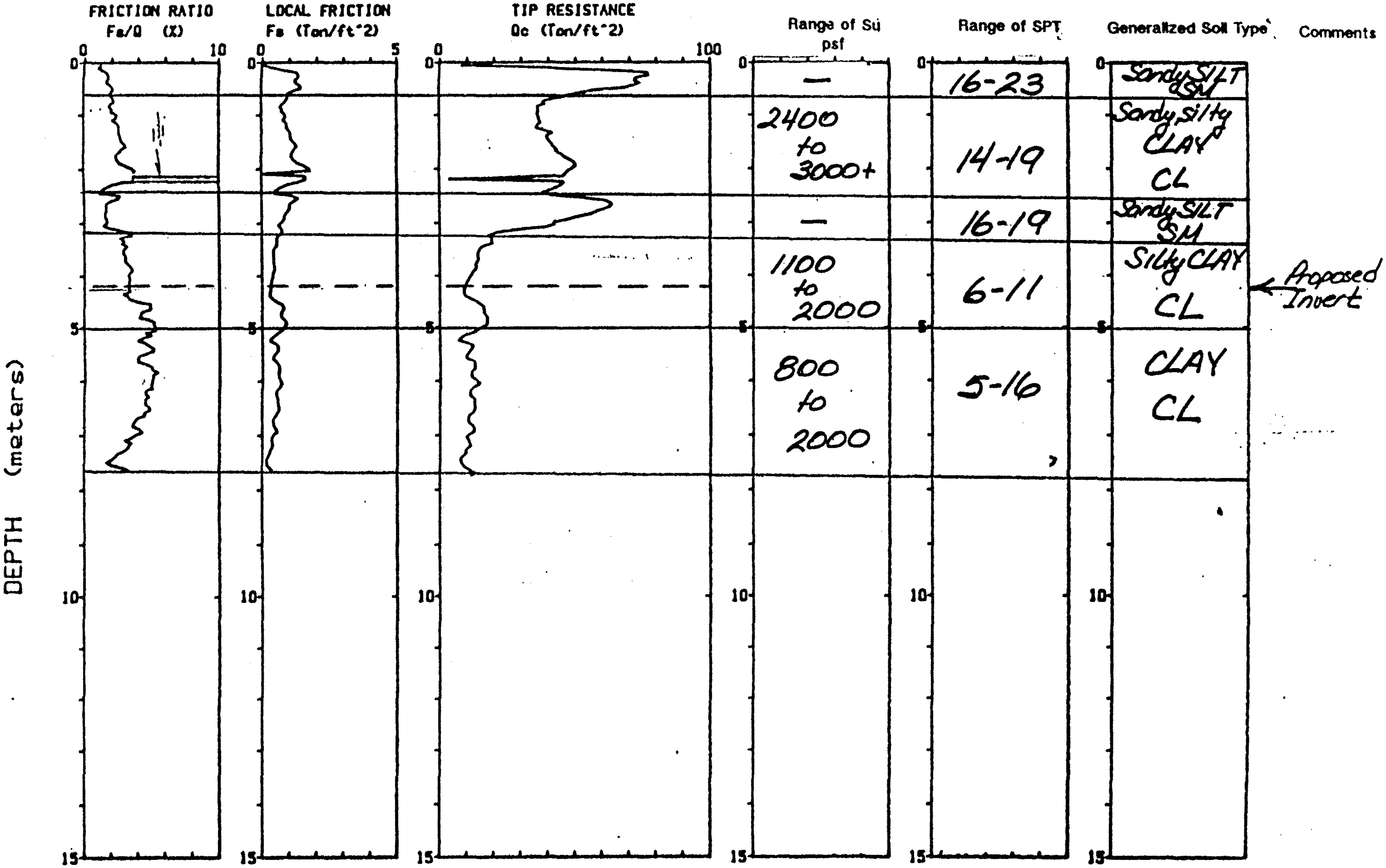


SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER CPT Date : 01-04-89 15:42 Sounding : 890012 Pg 1 / 1

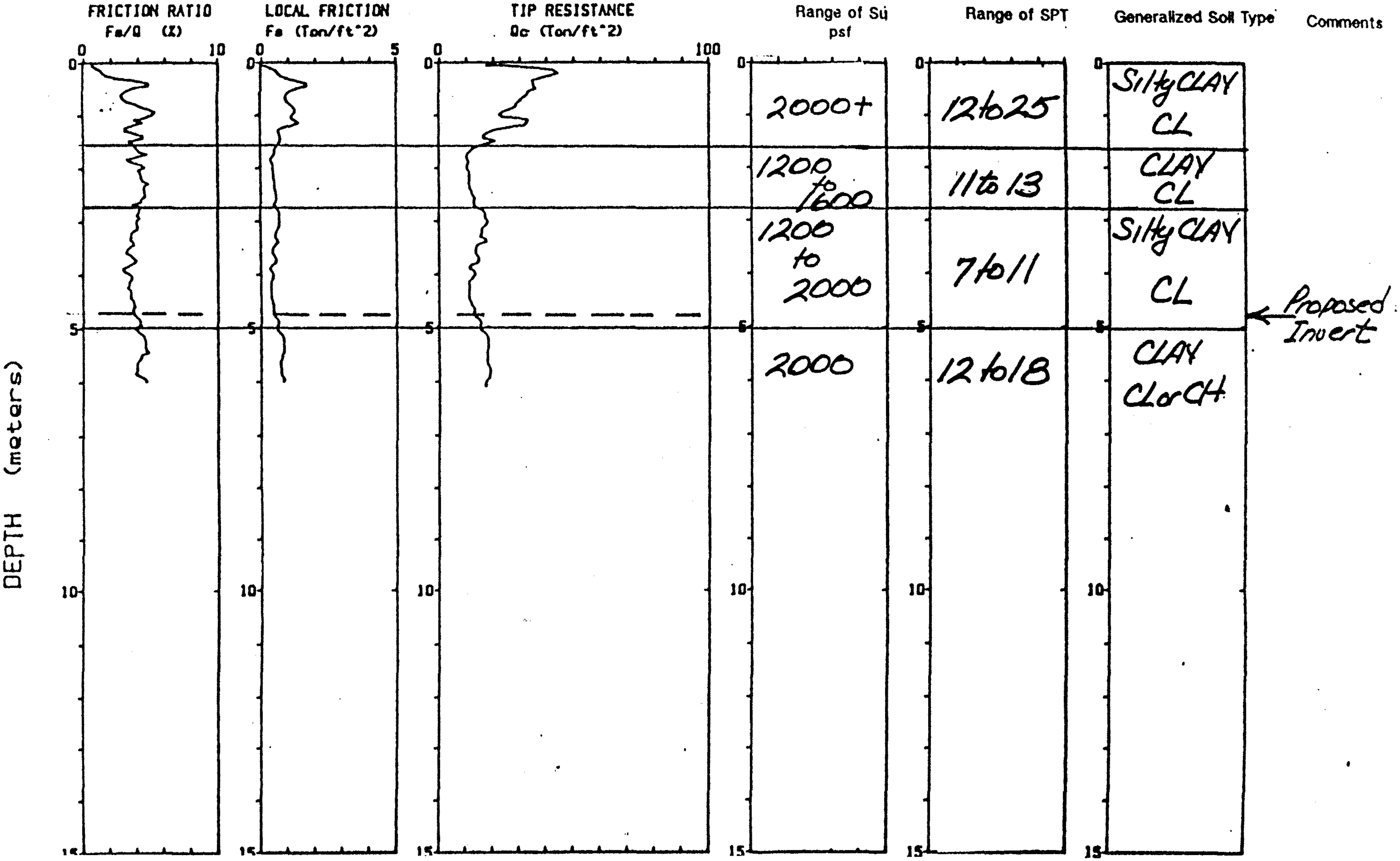
Location : CPT-7 (STA. 23+00) Cone Used : H0260 Job No. : LOWER SILVER CK



SCS INTERPRETATIONS

V B I

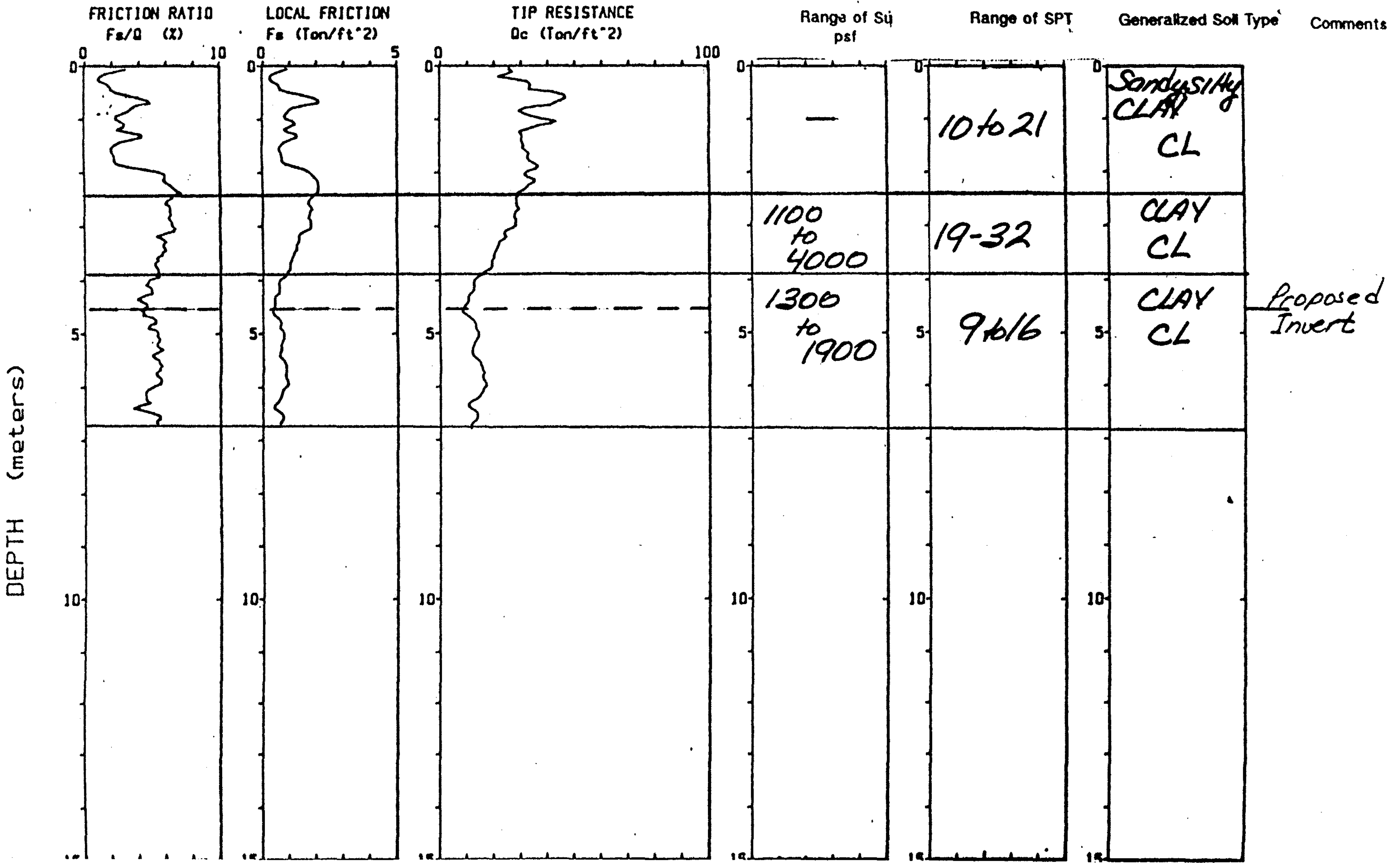
Operator : VIRGIL A. BAKER **CPT Date :** 01-04-89 16:08 **Sounding :** 890013 Pg 1 / 1
Location : CPT-8 (STA. 27+00) **Cone Used :** H0260 **Job No. :** LOWER SILVER CK



SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER CPT Date : 02-08-89 10:05 Sounding : 890165 Pg 1 / 1
Location : CPT-9 (STA 29+20) Cone Used : H0260 Job No. : LOWER SILVER CRK

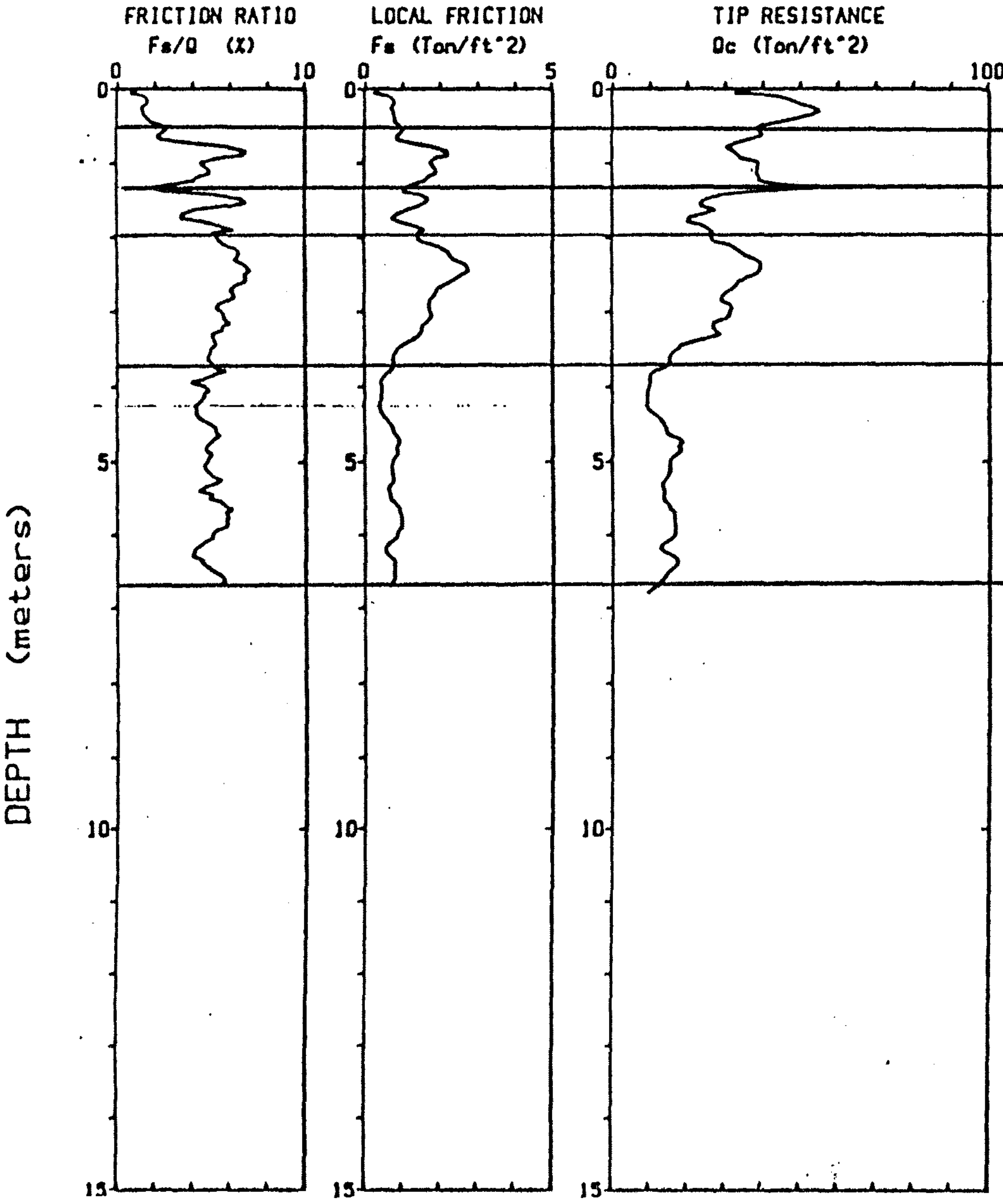


Range of Su psf	Range of SPT	Generalized Soil Type	Comments
—	10 to 21	Sandy silty CLAY CL	
1100 to 4000	19-32	CLAY CL	
1300 to 1900	9 to 16	CLAY CL	Proposed Invert

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER   CPT Date : 02-08-89 10:48   Sounding : 890168 Pg 1 / 1
Location : CPT-10(STA32+00)   Cone Used : H0260   Job No. : LOWER SILVER CRK

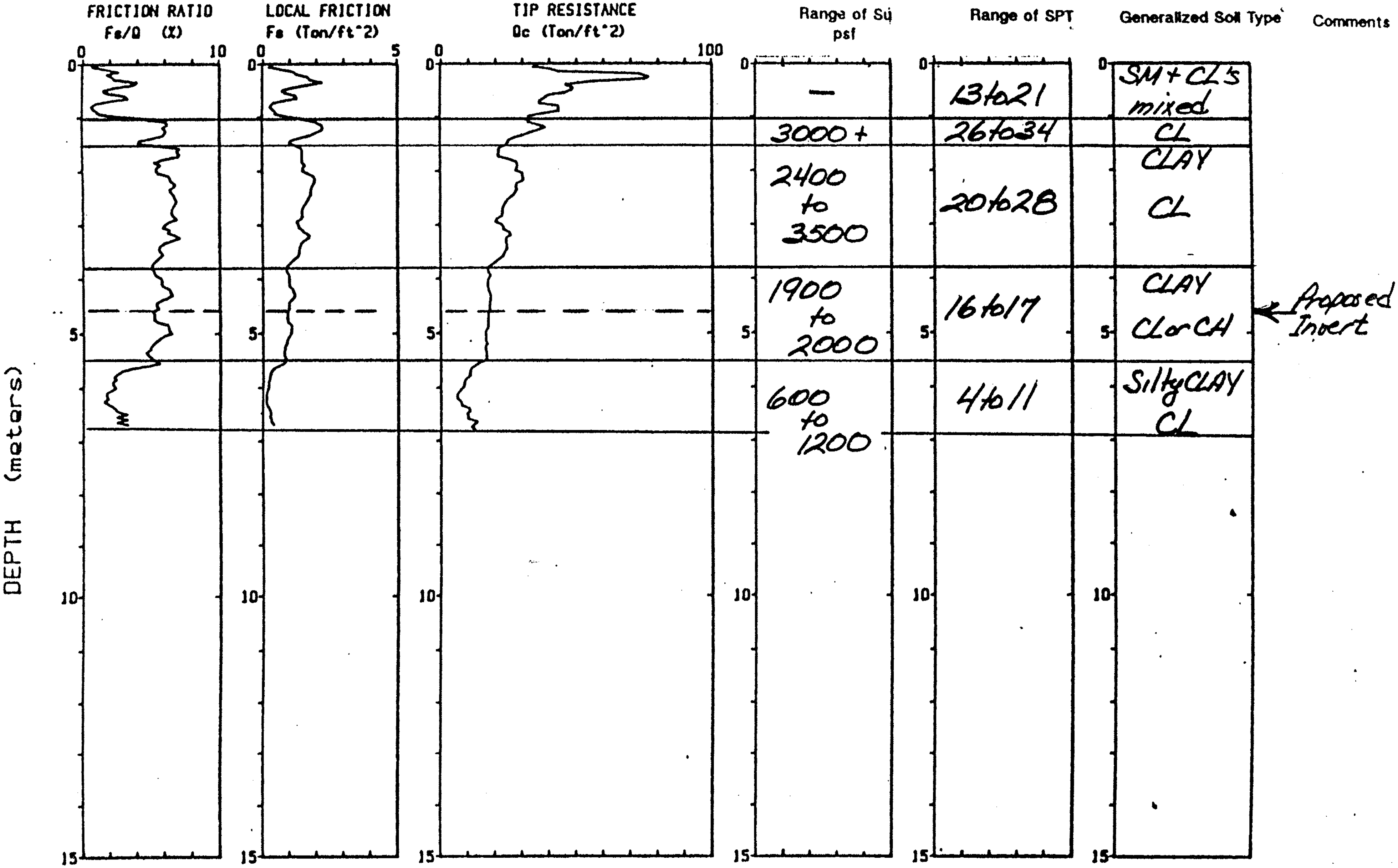


Range of Su psf	Range of SPT	Generalized Soil Type	Comments
—	15	Sandy SILT ML	
4000	14 to 32	Silty CLAY CL	
3000	23	CLAY CL	
2700 to 4000	21 to 31	CLAY CL or CH	
1000 to 1800	9 to 16	CLAY CL	← Proposed Invert

SCS INTERPRETATIONS

V B I

Operator : VIRGIL A. BAKER CPT Date : 02-08-89 11:21 Sounding : 890167 Pg 1 / 1
Location : CPT-11(STA35+75) Cone Used : H0260 Job No. : LOWER SILVER CRK

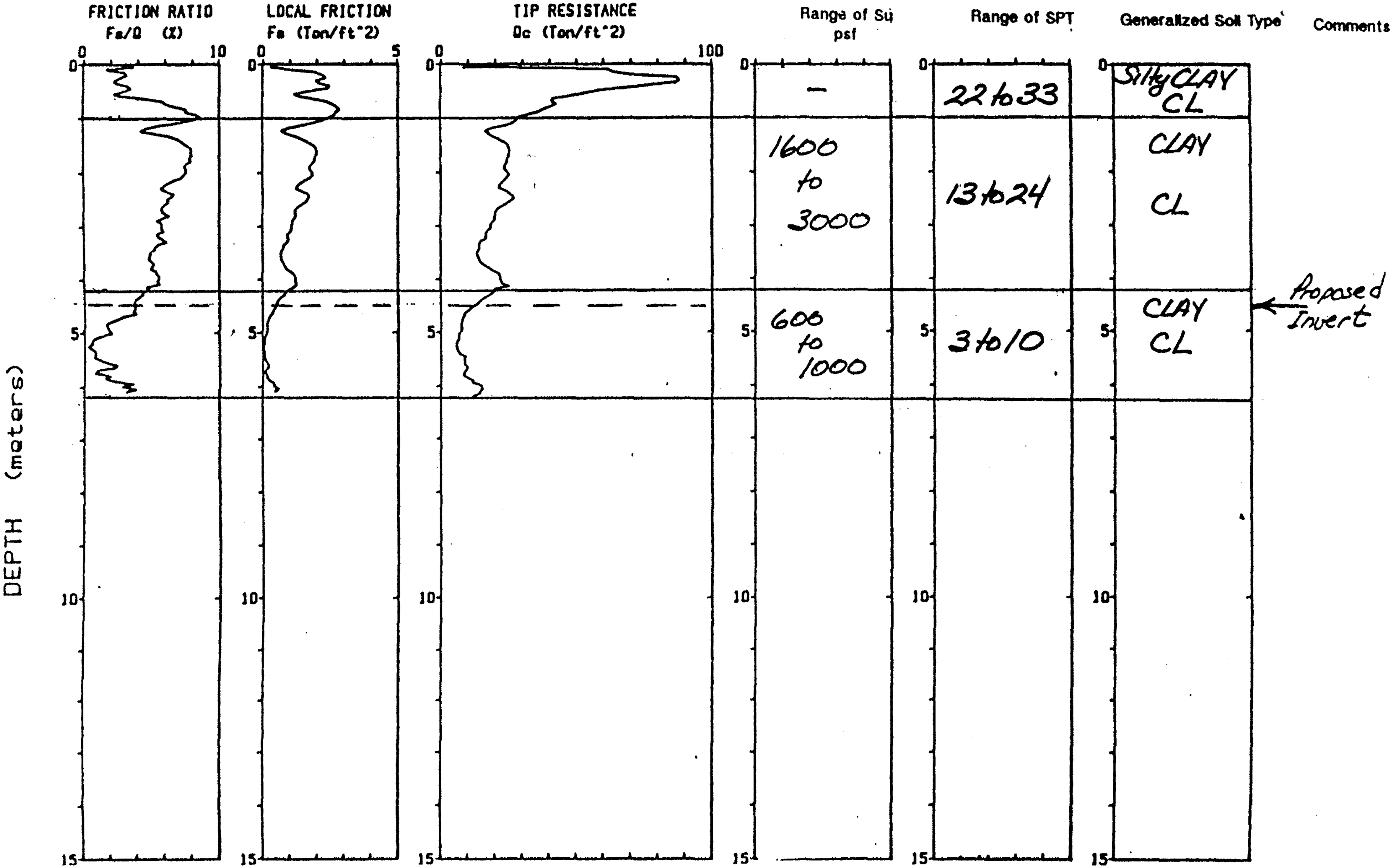


Range of Su psf	Range of SPT	Generalized Soil Type	Comments
—	13to21	SM+CL's mixed	
3000+	26to34	CL	
2400 to 3500	20to28	CLAY CL	
1900 to 2000	16to17	CLAY CLorCH	Proposed Invert
600 to 1200	4to11	SiltyCLAY CL	

SCS INTERPRETATIONS

V B I

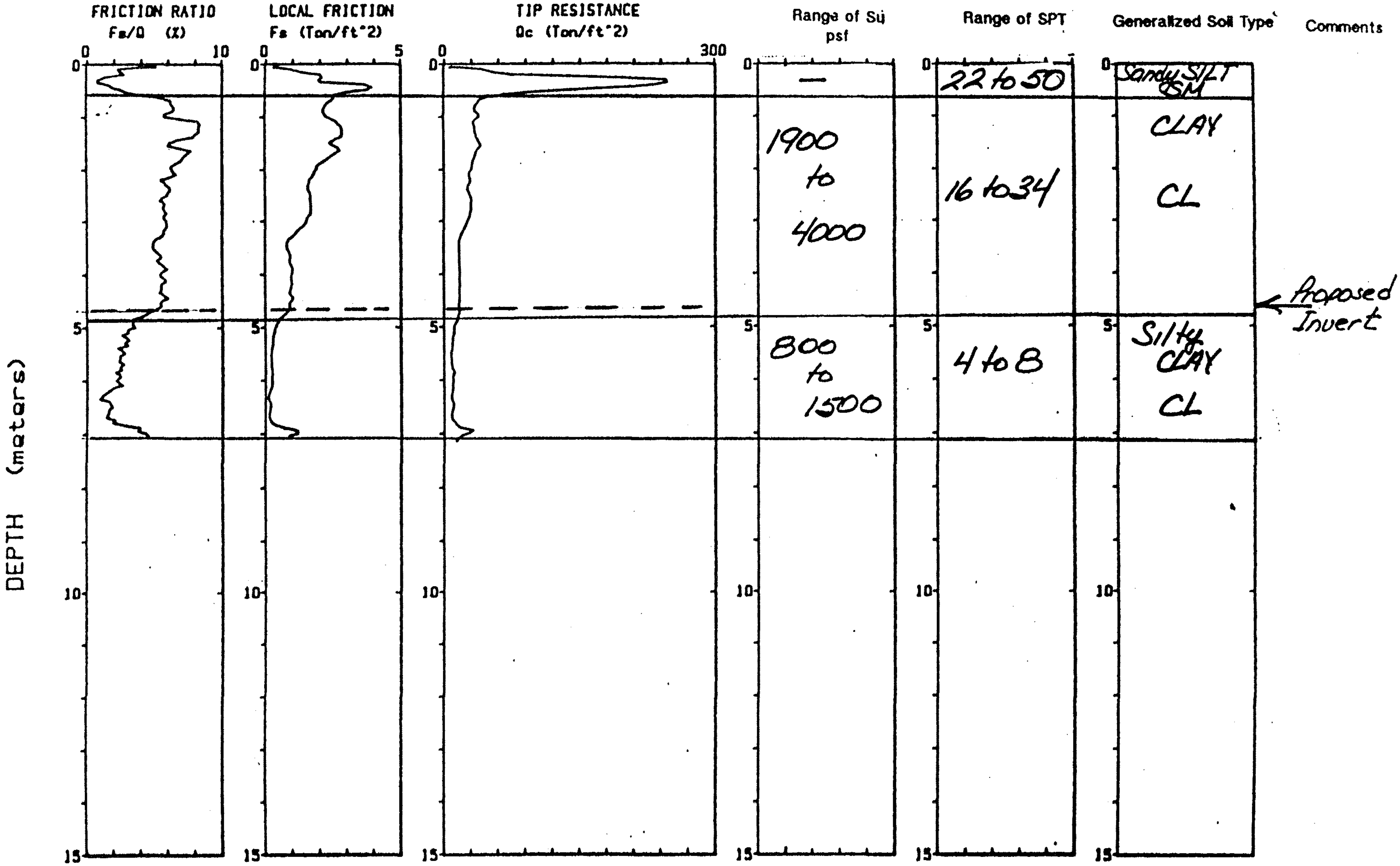
Operator : VIRGIL A. BAKER
CPT Date : 02-08-89 11:51
Sounding : 890168 Pg 1 / 1
Location : CPT-12(STA39+00)
Cone Used : H0260
Job No. : LOWER SILVER CRK



SCS INTERPRETATIONS

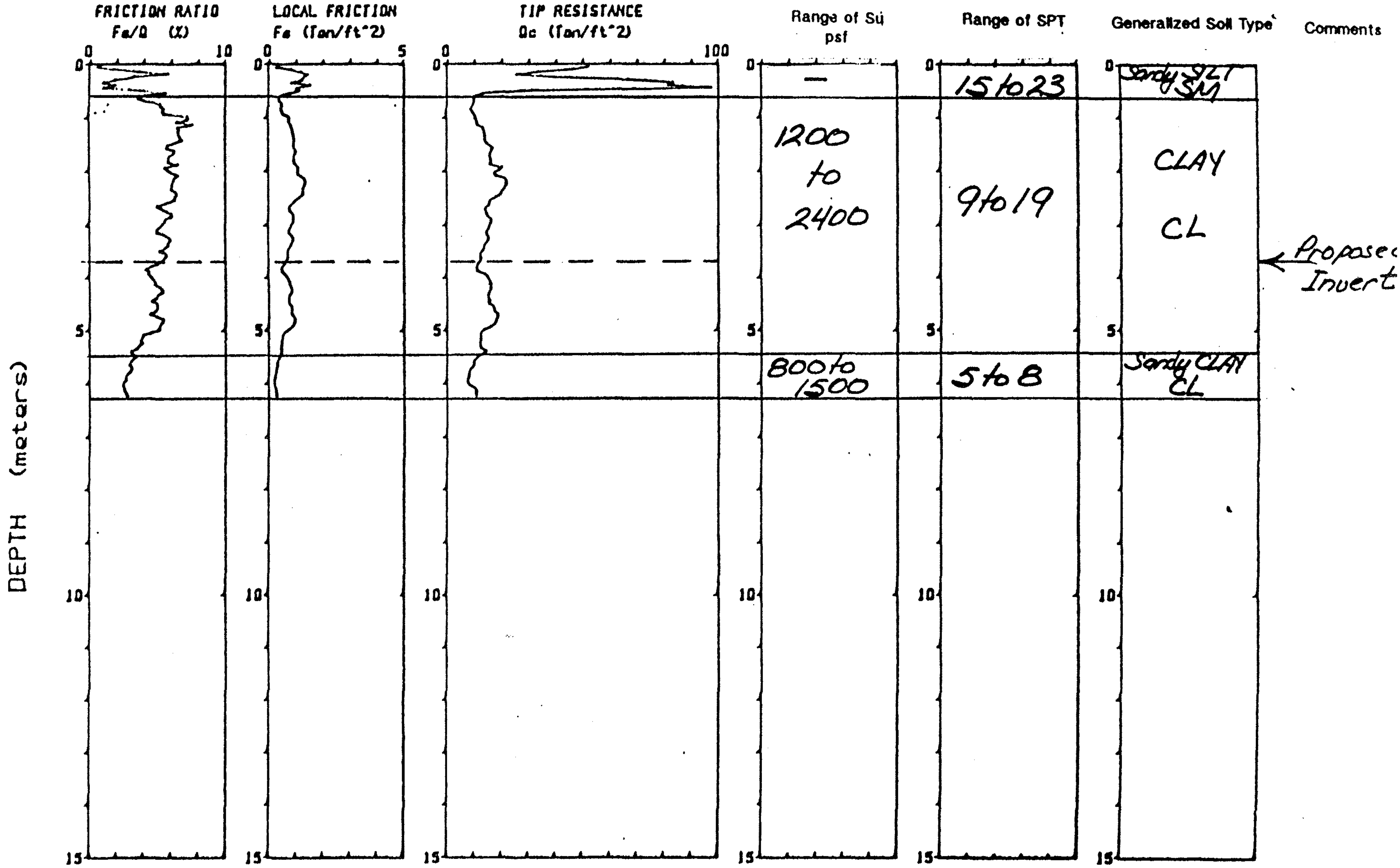
V B I

Operator : VIRGIL A. BAKER
CPT Date : 02-08-89 12:23
Sounding : 890169 Pg 1 / 1
Location : CPT-13(STA41+50)
Cone Used : H0260
Job No. : LOWER SILVER CRK



SCS INTERPRETATIONS

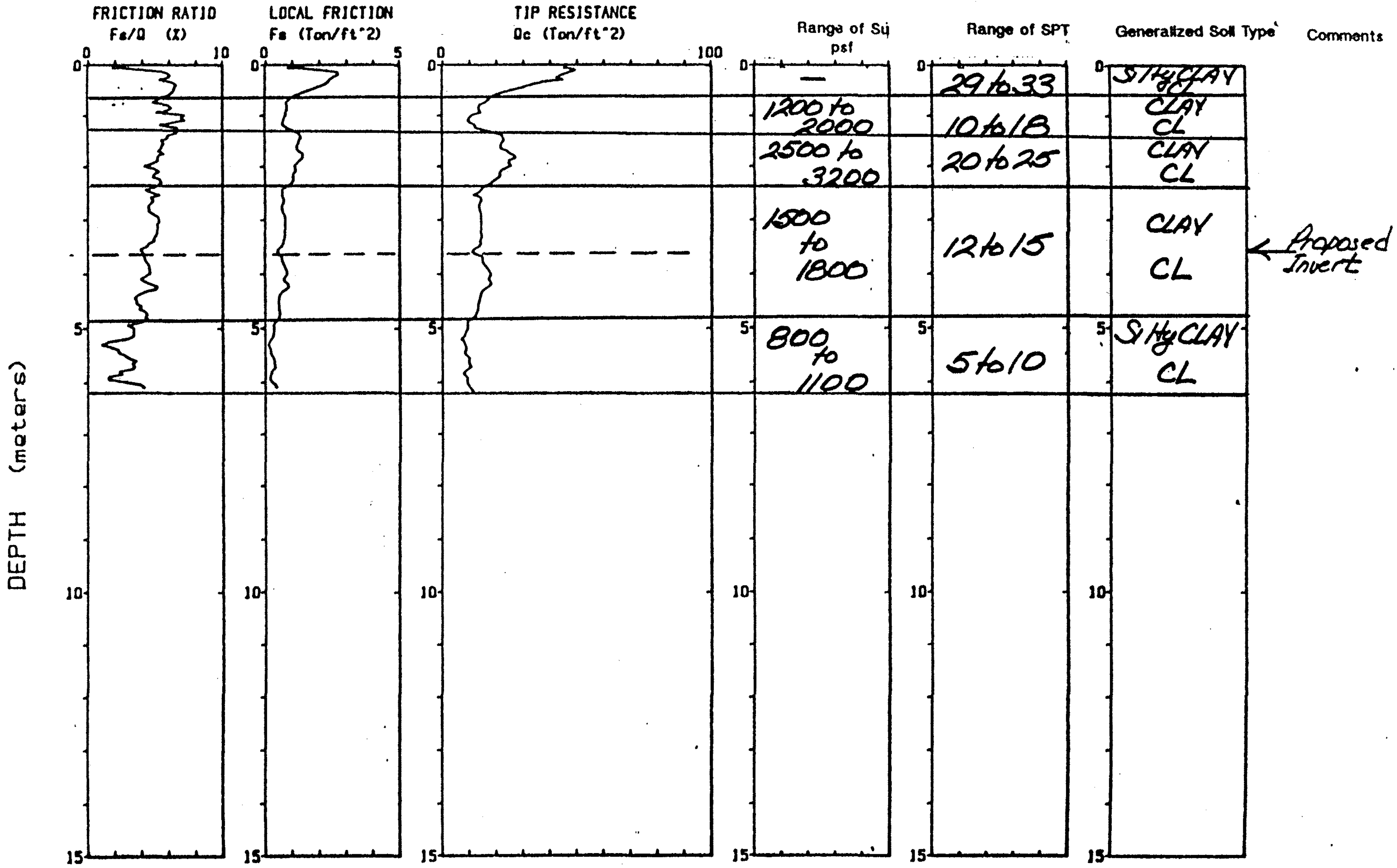
Operator : VIRGIL A. BAKER
CPT Date : 02-17-89 13:23
Sounding : 890218 Pg 1 / 1
Location : CPT-14
Cone Used : H0260
Job No. : LOWER SILVER CK.



SCS INTERPRETATIONS

V B I

Operator :	VIRGIL A. BAKER	CPT Date :	02-08-89 13:03	Sounding :	890170 Pg 1 / 1
Location :	CPT-15 (STA50+50)	Cone Used :	H0260	Job No. :	LOWER SILVER CRK



Range of Su psf	Range of SPT	Generalized Soil Type	Comments
—	29 to 33	Silty CLAY CL	
1200 to 2000	10 to 18	CLAY CL	
2500 to 3200	20 to 25	CLAY CL	
1500 to 1800	12 to 15	CLAY CL	← Proposed Invert
800 to 1100	5 to 10	Silty CLAY CL	

OUTPUT DATA DESCRIPTION
FOR
HEC-2 WATER SURFACE PROFILES
COMPUTER PROGRAM

OUTPUT DATA DESCRIPTION

This appendix contains a description of all output variables that apply to any cross section. Many of these variables can be selected for summary printout display.

Variable	Description
ACH	Cross section area of the channel.
AEX	Area of channel improvement excavation in square feet at cross section.
ALOB	Cross section area of the left overbank
ALPHA	Velocity head coefficient.
AREA	Cross section area.
AROB	Cross section area of the right overbank.
BANK ELEV LEFT/RIGHT	Left and right bank elevations.
BAREA	Net area of the bridge opening below the low chord. Entered on SB card.
B-S N	Value of composite Manning's n for ice covered stream computed by Belokon-Sabaneev formula.
BW	The bottom width of the trapezoidal excavation.
C	Chezy's roughness coefficient, used in ice stability equation.
CASE	A variable indicating how the water surface elevation was computed. Values of -1, -2, -3, and 0 indicate assumptions of critical depth, minimum difference, a fixed change (X5 card), or a balance between the computed and assumed water surface elevations, respectively.
CCHV	Contraction coefficient.
CEHV	Expansion coefficient.
CHSLOP	Channel slope.
CLASS	Identification number for following types of bridge flow.

CLASS	TYPE OF FLOW
1	Low Flow - Class A
2	Low Flow - Class B
3	Low Flow - Class C
10	Pressure Flow Alone
11, 15	Weir and Low Flow - Class A
12	Weir and Low Flow - Class B
13	Weir and Low Flow - Class C
30	Pressure Flow and Weir Flow
59	Special Bridge Reverts to Normal Bridge Method
67	For Encroachment Methods 3 through 6

Variable	Description
CLSTA	The centerline station of the trapezoidal excavation.
CORAR	Area of the bridge deck subtracted from the total cross sectional area in the normal bridge method.
CRIWS	Critical water surface elevation.
CWSEL	Computed water surface elevation.
DEPTH	Depth of flow.
DIFEG	Difference in energy elevation for each profile.
DIFKWS	Difference in water surface elevation between known and computed.
DIFWSP	Difference in water surface elevation for each profile.
DIFWSX	Difference in water surface elevation between sections.
EG	Energy gradient elevation for a cross section which is equal to the computed water surface elevation CWSEL plus the velocity head HV.
EGLWC	The energy grade line elevation computed assuming low flow.
EGPRS	The energy grade line elevation computed assuming pressure flow.
ELENCL	Elevation of left encroachment.
ELENCR	Elevation of right encroachment.
ELLC	Elevation of the bridge low chord. Equals ELLC entered on the X2 card if used, otherwise it equals maximum low chord in the BT table.
ELMIN	Minimum elevation in the cross section.
ELTRD	Elevation of the top of roadway. Equals ELTRD entered on the X2 card if used, otherwise it equals the minimum top of the road in the BT table.
ENDST	Ending station where the water surface intersects the ground on the right side.
H	Hydraulic radius, used in ice stability equation.
H3	Drop in water surface elevation from upstream to downstream sides of the bridge computed using Yarnell's equation assuming Class A low flow.
HL	Energy loss due to friction.

Variable	Description
HV	Discharge-weighted velocity head for a cross section.
IDC	Number of trials required to determine critical depth.
ICE N	Manning's n value for floating ice entered on IC card.
ICONT	Number of trails to determine the water surface elevation by the slope area method, or the number of trials to balance the energy gradient by the special bridge method, or the number of trials required to calculate encroachment stations by encroachment methods 5 and 6.
IHLEQ	Friction loss equation index.
ITRIAL	Number of trials required to balance the assumed and computed water surface elevations.
KRATIO	Ratio of the upstream to downstream conveyance.
OLOSS	Energy loss due to minor losses such as transition losses.
PERENC	The target of encroachment requested on the ET card.
Q	Total flow in the cross section.
QCH	Amount of flow in channel.
QCHP	Percent of flow in the channel.
QLOB	Amount of flow in theleft overbank.
QLOBP	Percent of flow in the left overbank.
QPR	Total pressure of low flow at the bridge.
QROB	Amount of flow in the right oberbank.
QROBP	Percent of flow in the right overbank.
QWEIR	Total weir flow at the bridge.
RBEL	Right bank elevation.
SECNO	Identifying cross section number. Equal to the number in the first field of the X1 card.
SLOPE	Slope of the energy grade line for the current section.
SPGR	Specific gravity of floating ice. Entered on IC card.
SSTA	Starting station where the water surface intersects the ground.
STENCL	The station of the left encroachment.
STENCR	The station of the right encroachment.

Variable	Description
STCHL	Station of the left bank.
STCHR	Station of the right bank.
TELMX	Elevation of the lower of the end points of the cross section.
T/H	Ratio of channel ice thickness and hydraulic radius, used in ice stability equation.
TIME	Travel time from the first cross section to the current cross section in hours.
TOPWID	Width at the calculated water surface elevation.
TRAPEZOID AREA	Net area of the bridge opening up to the low chord as defined by SS, BWP and BWC on the SB card. Should be close to BAREA on the SB card.
TWA	Cumulative surface area (acres of 1000 square meters) of the stream from the first cross section.
VCH	Mean velocity in the channel.
VEXR	Volume of channel improvement excavation in 1000's of cubic yards in a reach (between two adjacent cross sections).
VEXT	Cummulative volume of channel improvement excavation in 1000's of cubic yards up to the current cross section.
VLOB	Mean velocity in the left overbank
VOL	Cumulative volume (acre-feet or 1000 cubic meters) of water in the stream from the first cross section.
VROB	Mean velocity in the right overbank.
WSELK	Known water surface elevation; for example, a high water mark.
WTN	Length weighted value of Manning's 'n' for the channel. Used when computing Manning's 'n' from high water marks.
X*K	Pariset's ice stability indicator (times 1000).
XLBEL	Left bank elevation.
XLCH	Distance in the channel between the previous cross section and the current cross section.
XLOBL	Distance in the left overbank between the previous cross section and the current cross section.
XLOBR	Distance in the right overbank between the previous cross section and the current cross section.

Variable	Description
XNCH	Manning's 'n' for the channel area.
XNL	Manning's 'n' for the left overbank area.
XNR	Manning's 'n' for the right overbank area.
.01K	The total discharge (index Q) carried with $S^{1/2} = .01$ (equivalent to .01 times conveyance).